PRONGHORN

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2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR308 - CLEARMONT

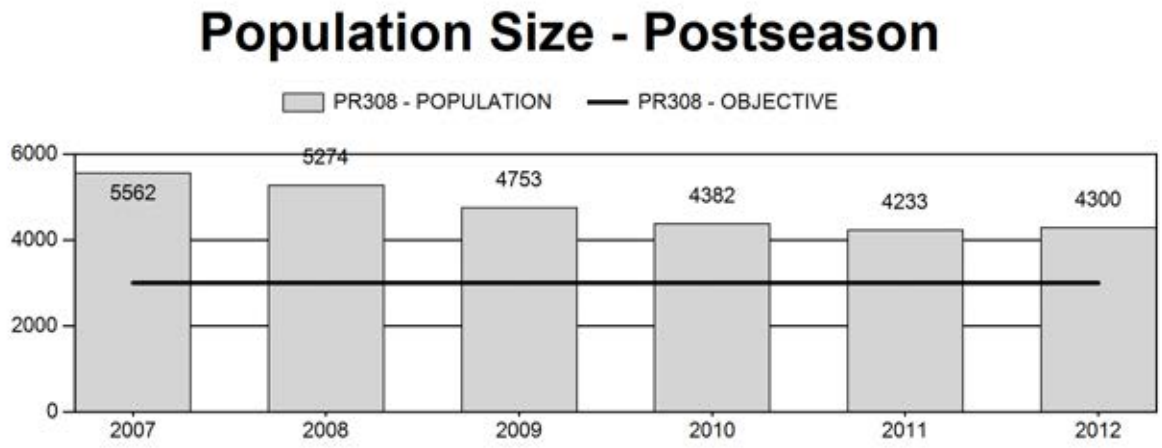
HUNT AREAS: 15
PREPARED BY: TIM THOMAS

	2007 - 2011 Average	2012	2013 Proposed
Population:	4,841	4,300	4,170
Harvest:	583	427	500
Hunters:	652	512	575
Hunter Success:	89%	83%	87 %
Active Licenses:	734	586	650
Active License Percent:	79%	73%	77 %
Recreation Days:	2,396	2,063	2,200
Days Per Animal:	4.1	4.8	4.4
Males per 100 Females	54	47	
Juveniles per 100 Females	57	65	

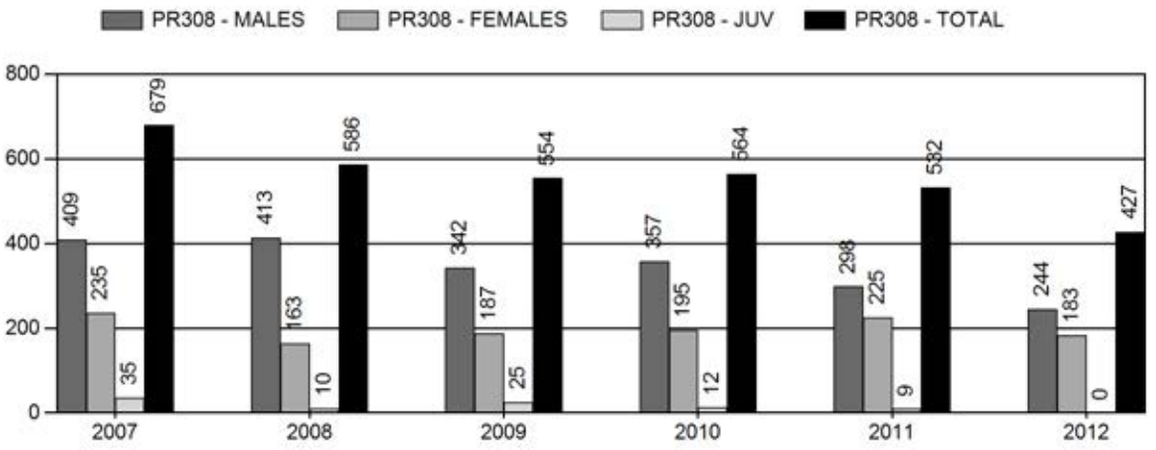
Population Objective:	3,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	43%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/28/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

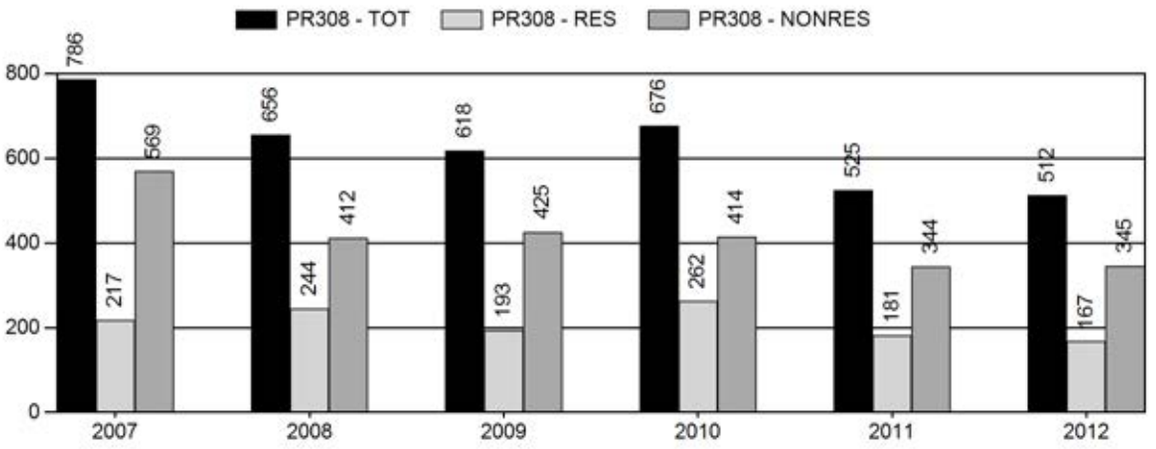
	JCR Year	Proposed
Females ≥ 1 year old:	9%	10%
Males ≥ 1 year old:	25%	31%
Juveniles (< 1 year old):	1%	1%
Total:	11%	11%
Proposed change in post-season population:	3%	-1%



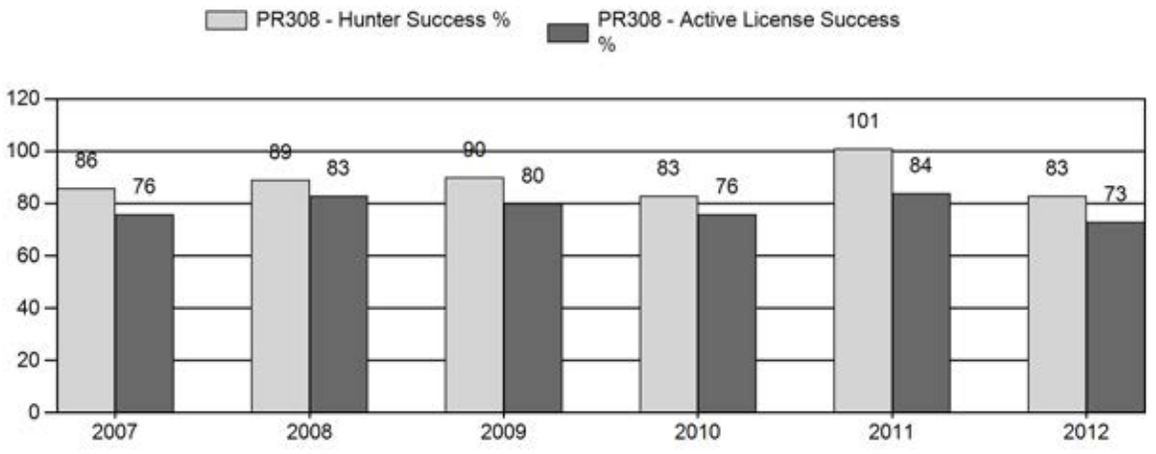
Harvest



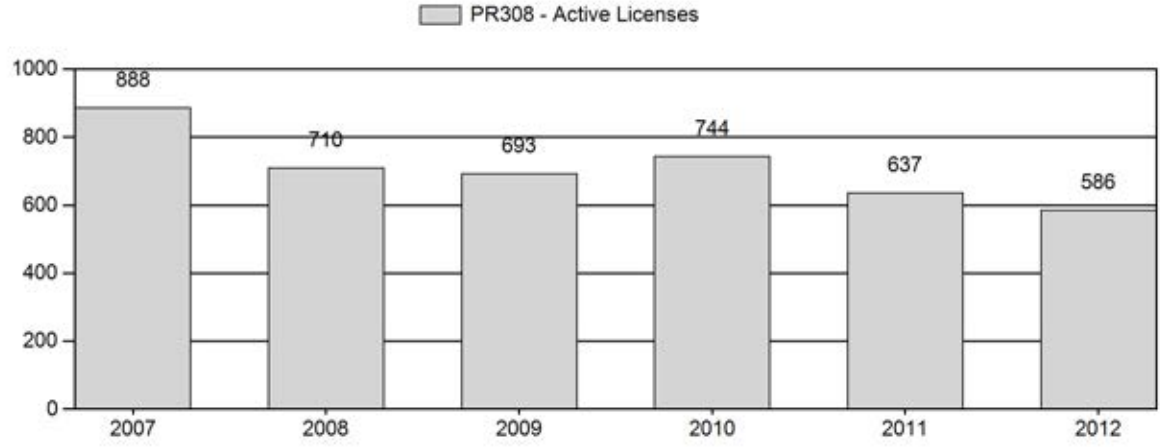
Number of Hunters



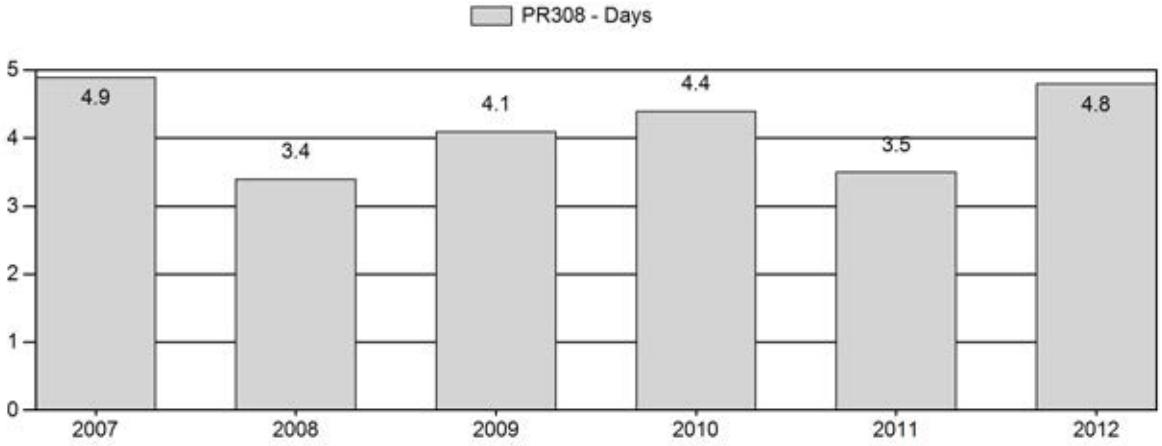
Harvest Success



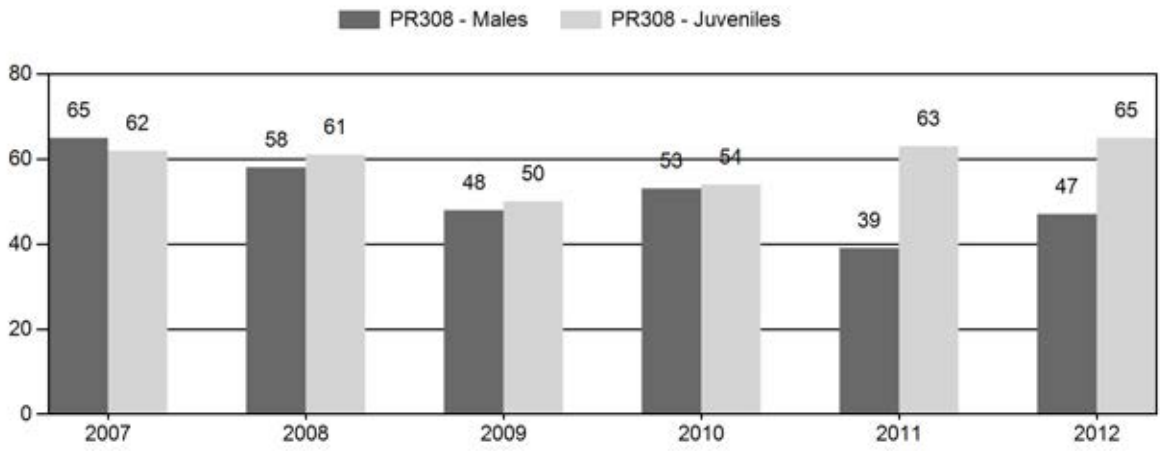
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR308 - CLEARMONT

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	6,309	49	273	322	29%	499	44%	308	27%	1,129	1,351	10	55	65	± 7	62	± 7	38
2008	5,918	74	253	327	27%	562	46%	344	28%	1,233	1,752	13	45	58	± 6	61	± 6	39
2009	5,362	37	251	288	24%	597	51%	296	25%	1,181	1,258	6	42	48	± 5	50	± 5	33
2010	5,003	100	178	278	26%	525	48%	282	26%	1,085	1,410	19	34	53	± 6	54	± 6	35
2011	4,818	18	44	62	19%	161	50%	102	31%	325	1,568	11	27	39	± 9	63	± 13	46
2012	4,770	44	73	117	22%	251	47%	163	31%	531	0	18	29	47	± 8	65	± 10	44

2013 HUNTING SEASONS
CLEARMONT PRONGHORN HERD (PR308)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
15	1	Oct. 1	Oct. 14	800	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	800	Limited quota licenses; doe or fawn
Archery		Aug. 15	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
15		No Change
Herd Unit Total		**No Change**

Management Evaluation
Current Postseason Population Management Objective: 3,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~4,300
2013 Proposed Postseason Population Estimate: ~4,200

Herd Unit Issues

The management objective for the Clearmont Pronghorn Herd Unit is a post-season population objective of 3,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1996.

Industrial scale oil and gas development and outfitting in the herd unit have resulted in restricted hunting access to some private lands. There are very little public land hunting opportunities in this herd unit. The restricted access has made it difficult to attain adequate harvest in portions of the herd.

Weather

The spring and summer of 2012 was warm and dry, resulting in drought conditions throughout the region. The winter of 2012-13 was generally mild and open until late January, when several winter storms occurred weekly through early March, and then again in April. On-going drought conditions do not appear to have negatively affect fawn production.

Habitat

The SR-Buffalo Creek Divide habitat transect is located in the central portion of this herd unit and the Coal Creek Road habitat transect is located in the south-central portion of this herd unit. These habitat transects monitor annual growth and utilization of Wyoming big sage-brush. These transect were not read for several years. Growth was recorded in the fall 2012 with an average of 16 mm annual production at SR-Buffalo Creek Divide and 15 mm of annual

production at Coal Creek Road. This is well below the highest recorded level of 50 mm and 66 mm, respectively, in 2007. The SR-Buffalo Creek Divide transect was partially destroyed in the summer of 2012 by gravel mining.

Field Data

Starting 2011, we moved from aerial classification surveys to ground classification surveys to reduce risk for employees and reduces costs associated with aircraft rentals.

Fawn production, as measured by observed doe:fawn ratios, has not exceeded 70 fawns per 100 does during the past 20 years, limiting the potential for this herd to grow quickly. This has helped keep this herd from growing even more above the objective. In August, 2012, we observed 65 fawns:100 does.

We observed 47 males (18 yearling:29 adult):100 does during August classification surveys. While a buck:doe ratio this high would normally be consider Special Management, restricted access to private lands limits our ability to obtain higher buck harvest which is sustainable in this herd unit.

Hunter satisfaction has remained high, with 83% of surveyed hunters (n=89) satisfied or very satisfied.

Harvest Data

Since 2007, we have issued 1,600 licenses; 800 Type 1 (any antelope) and 800 Type 6 (doe or fawn). We have not sold out licenses since raising numbers to this level. In 2012, we sold 414 Type 1 licenses (52%) and only 239 Type 6 licenses (30%), a significant decrease in license sales from 2010, when we sold 546 Type 1 licenses and 275 Type 6 licenses.

In 2012, hunters harvested an estimated 427 pronghorn, a 20% decline from the 2011 harvest and the lowest harvest since 2004. Hunters average about 92% success over the past 10 years, compared to 83% success in 2012. License success follows a similar trend (10 year mean = 84%; 2012 = 73%). Hunter effort, as measured by the number of days hunted per animal harvested, was 4.8 days/animal, compared to 3.6 days/animal over the past 10 years. These data suggest that pronghorn have become more difficult to harvest due either to a decrease in access or a decrease in the population. Access hasn't likely change significantly over the past 10 years, suggesting the primary reason for reduced license sales and success is a decreasing population.

Population

The 2012 post-season population estimate is well above the established management objective, at about 4,300 with the population trending slowly downward from the high of about 6,000 pronghorn in 2004-2005. The last line transect survey was conducted in June 2004, which resulted in an estimated end-of-biological-year population of 6,631 pronghorn.

The "Constant Juvenile – Constant Adult Survival Rate" (CJ,CA) spreadsheet model was chosen to estimate the post-season population for this herd. This model had the lowest relative Akaike information criterion (AIC) value (52) of the three possible models. The population dynamics of

this model appear reasonable and consistent with observed dynamics in the field. Since we have limited data and no independent population estimate since 2004, we consider this "fair" model.

Landowners, hunters and WGFD field personnel have noted a decline in this population over the past several years. Of landowners who returned an annual survey, 57% (n=17) indicated pronghorn numbers were at or near desired levels and most (68%) suggested similar season strategies for 2013.

Management Summary

The regular hunting season traditionally runs two weeks (October 1 – 14) for Type 1 licenses, and four weeks (October 1 – 31) for Type 6 licenses since the 2005 season. An archery pre-season generally runs August 15 – September 30. Hunters in this herd unit are able to purchase two Type 1 (any antelope) licenses and four Type 6 (doe or fawn antelope) licenses, which allows hunters with access to private lands the opportunity to harvest multiple animals. There is limited pronghorn hunting on State Trust Lands near Ulm. This parcel receives considerable hunting pressure and most pronghorn move onto adjoining private lands. We observe high buck numbers, as measured by buck:doe ratios, in this herd unit, averaging 50 bucks:100 does. This is likely a function of limited access to private lands where the majority of pronghorn occur.

We project a harvest of approximately 500 pronghorn in 2013, resulting in an estimated post-season population of about 4,200 pronghorn. These predictions assume near normal fawn production and survival, as well as similar license sales and success rates for the 2013 hunting season. Due to limited access, we will likely not reach the management objective for this herd unit with hunting alone. This herd unit management objective should be reviewed in the near future.

INPUT	
Species:	Pronghorn
Biologist:	Timothy P. Thomas
Herd Unit & No.:	Clearmont PR308
Model date:	02/26/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	43	52	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	42	56	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	24	112	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	1362	1177	3257	**5797**	1316	658	2874	**4848**	913	2855	**3768**	4382	1229		3000
1994	1616	895	2798	**5308**	1575	429	2426	**4431**	809	2554	**3363**				3000
1995	1624	792	2503	**4919**	1544	493	2171	**4209**	872	2322	**3194**	4767	1143		3000
1996	1315	855	2276	**4445**	1315	472	2249	**4036**	781	2376	**3157**	3784	751		3000
1997	829	765	2329	**3923**	829	467	2287	**3583**	630	2248	**2878**	1620	483		3000
1998	1540	618	2203	**4360**	1540	382	2181	**4103**	799	2391	**3190**				3000
1999	1519	783	2343	**4645**	1519	616	2321	**4456**	1005	2506	**3511**	3648	1822		3000
2000	1624	985	2456	**5064**	1624	806	2433	**4862**	1202	2637	**3839**				3000
2001	1401	1178	2584	**5163**	1395	988	2570	**4952**	1282	2681	**3963**	3323	762		3000
2002	1751	1257	2627	**5635**	1751	1061	2609	**5421**	1463	2832	**4294**	4905	712		3000
2003	1546	1433	2775	**5755**	1546	1194	2750	**5490**	1504	2886	**4390**				3000
2004	1929	1474	2828	**6231**	1929	1170	2819	**5919**	1599	3074	**4673**	6631	1270		3000
2005	2071	1567	3013	**6651**	2051	1218	2809	**6079**	1670	3072	**4742**				3000
2006	2078	1637	3010	**6725**	2050	1249	2678	**5977**	1689	2936	**4625**				3000
2007	1776	1655	2878	**6309**	1738	1205	2619	**5562**	1537	2792	**4330**				3000
2008	1675	1507	2737	**5918**	1664	1052	2557	**5274**	1385	2732	**4117**				3000
2009	1327	1357	2677	**5362**	1300	981	2472	**4753**	1213	2532	**3745**				3000
2010	1333	1189	2481	**5003**	1319	796	2267	**4382**	1059	2361	**3421**				3000
2011	1466	1038	2314	**4818**	1456	710	2067	**4233**	1106	2281	**3386**				3000
2012	1451	1084	2235	**4770**	1451	815	2034	**4300**	1078	2199	**3277**				3000
2013	1509	1056	2155	**4720**	1498	726	1946	**4170**							3000
2014															
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.64			0.85		
1994	0.64			0.85		
1995	0.64			0.85		
1996	0.64			0.85		
1997	0.64			0.85		
1998	0.64			0.85		
1999	0.64			0.85		
2000	0.64			0.85		
2001	0.64			0.85		
2002	0.64			0.85		
2003	0.64			0.85		
2004	0.64			0.85		
2005	0.64			0.85		
2006	0.64			0.85		
2007	0.64			0.85		
2008	0.64			0.85		
2009	0.64			0.85		
2010	0.64			0.85		
2011	0.64			0.85		
2012	0.64			0.85		
2013	0.64			0.85		
2014						
2015						
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Parameters:	Optim cells
Juvenile Survival =	0.641
Adult Survival =	0.850
Initial Total Male Pop/10,000 =	0.118
Initial Female Pop/10,000 =	0.326

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

Year	Classification Counts: Juvenile/Female Ratio: Derived Est	Juvenile/Female Ratio: Field Est	Juvenile/Female Ratio: Field SE	Total Male/Female Ratio: Derived Est	Total Male/Female Ratio: Field Est	Total Male/Female Ratio: Field SE	Harvest: Males	Females	Juv	Total Harvest	Segment Harvest Rate (% of Total Males	Segment Harvest Rate (% of Females
1993		41.83	2.89	36.15	33.66	2.52	472	348	42	862	44.1	11.8
1994		57.74	4.15	31.97	33.21	2.89	423	338	37	798	52.0	13.3
1995		64.86	5.02	31.66	33.73	3.26	272	302	72	646	37.8	13.3
1996		57.78	4.74	37.57	40.25	3.73	348	24	0	372	44.8	1.2
1997		35.60	3.06	32.86	30.35	2.77	271	38	0	309	39.0	1.8
1998		69.91	6.10	28.05	29.78	3.48	214	20	0	234	38.1	1.0
1999		64.83	5.30	33.42	47.51	4.29	152	20	0	172	21.4	0.9
2000		66.11	6.78	40.11	37.66	4.66	163	21	0	184	18.2	0.9
2001		54.23	4.11	45.59	39.92	3.36	173	13	6	192	16.2	0.6
2002		66.67	4.24	47.83	41.10	3.06	178	17	0	195	15.6	0.7
2003		55.72	4.65	51.65	54.23	4.56	218	23	0	241	16.7	0.9
2004		68.21	3.84	52.11	54.49	3.29	276	8	0	284	20.6	0.3
2005		68.74	4.10	52.01	49.06	3.25	317	185	18	520	22.3	6.8
2006		69.04	4.12	54.37	54.94	3.52	352	302	26	680	23.7	11.0
2007		61.72	4.47	57.53	64.53	4.61	409	235	35	679	27.2	9.0
2008		61.21	4.19	55.06	58.19	4.05	413	163	10	586	30.2	6.6
2009		49.58	3.52	50.70	48.24	3.46	342	187	25	554	27.7	7.7
2010		53.71	3.97	47.92	52.95	3.93	357	195	12	564	33.0	8.6
2011		63.35	8.02	44.86	38.51	5.76	298	225	9	532	31.6	10.7
2012		64.94	6.53	48.48	46.61	5.22	244	183	0	427	24.8	9.0
2013		70.00	6.90	48.99	40.00	4.73	300	190	10	500	31.3	9.7
2014												
2015												
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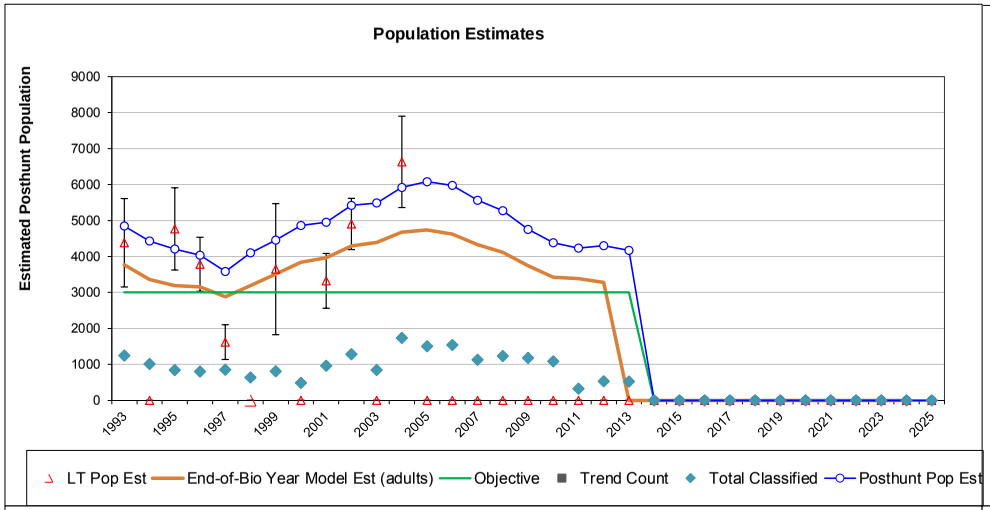
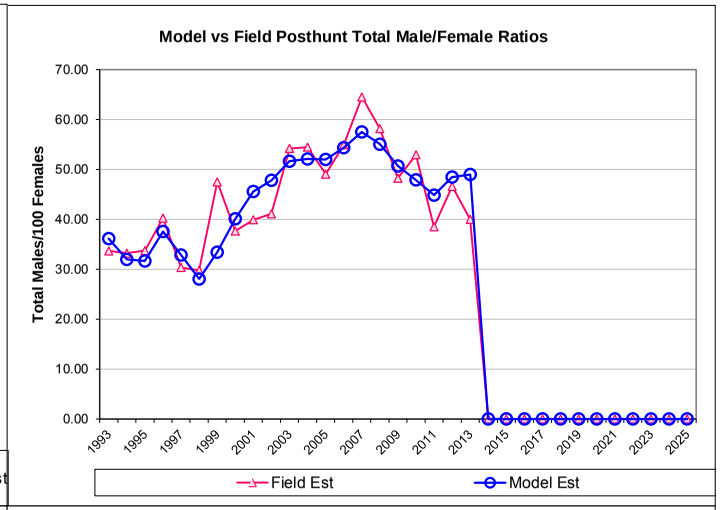
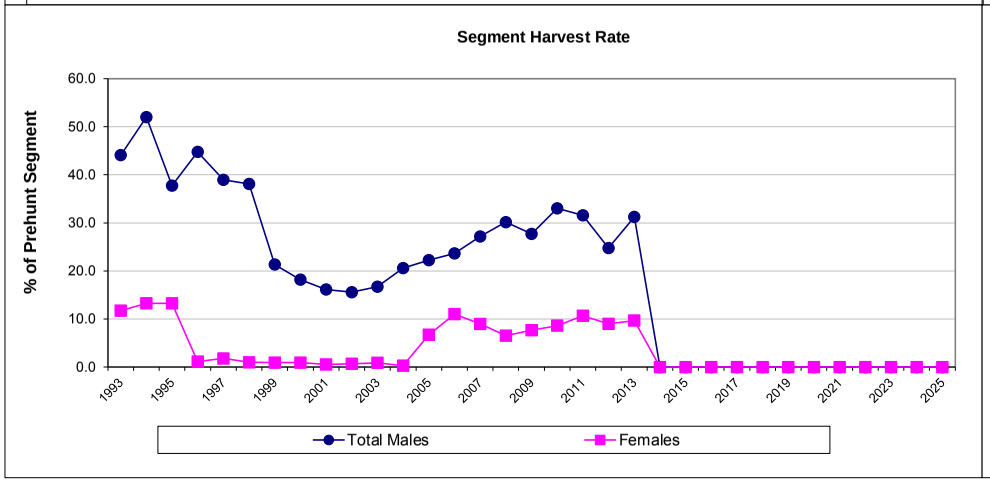
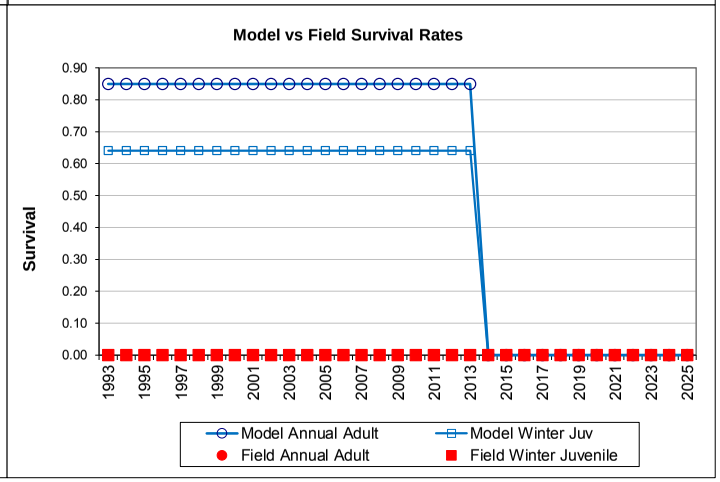
FIGURES









Comments: In 996, only total males observed was recorded. Yearling and adult ratios were estimated based on 5-year average (3 years prior and 2 years post 1996).

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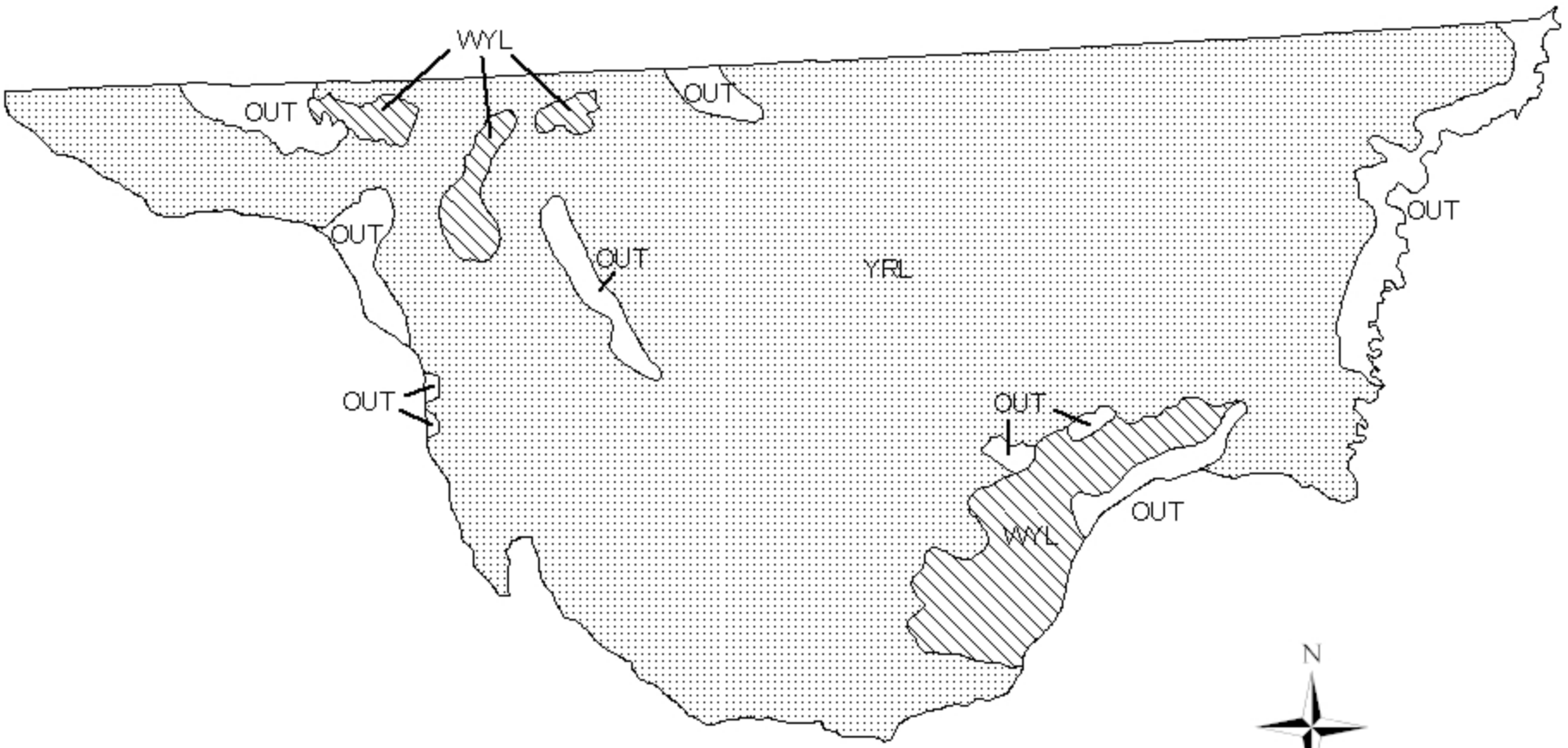


PH308 - Clearmont
HA 15
Revised - 4/87

2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR309 - PUMPKIN BUTTES

HUNT AREAS: 23

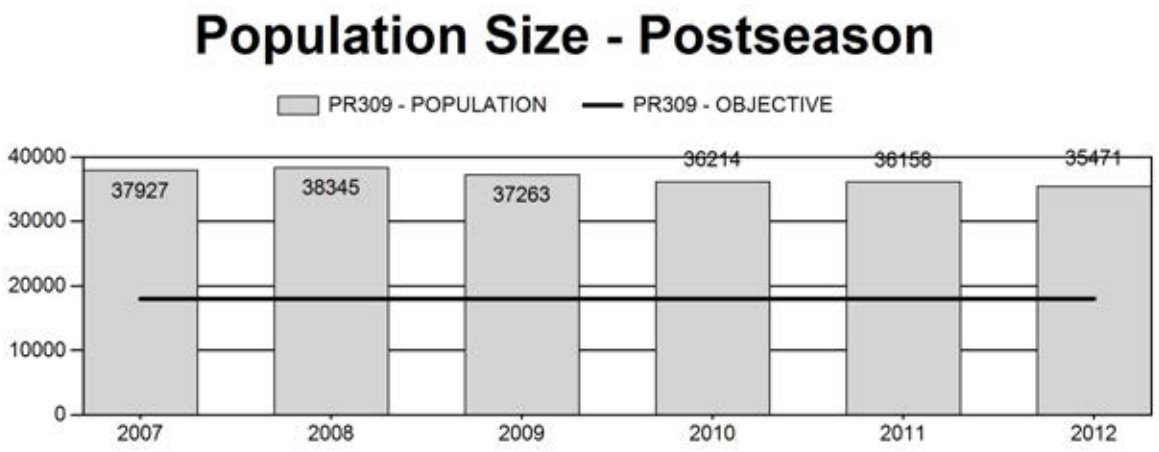
PREPARED BY: ERIKA PECKHAM

	2007 - 2011 Average	2012	2013 Proposed
Population:	37,181	35,471	34,823
Harvest:	2,445	2,498	2,471
Hunters:	2,595	2,699	2,700
Hunter Success:	94%	93%	92%
Active Licenses:	2,694	2,764	2,650
Active License Percent:	91%	90%	93%
Recreation Days:	7,751	7,959	7,950
Days Per Animal:	3.2	3.2	3.2
Males per 100 Females	59	57	
Juveniles per 100 Females	69	71	

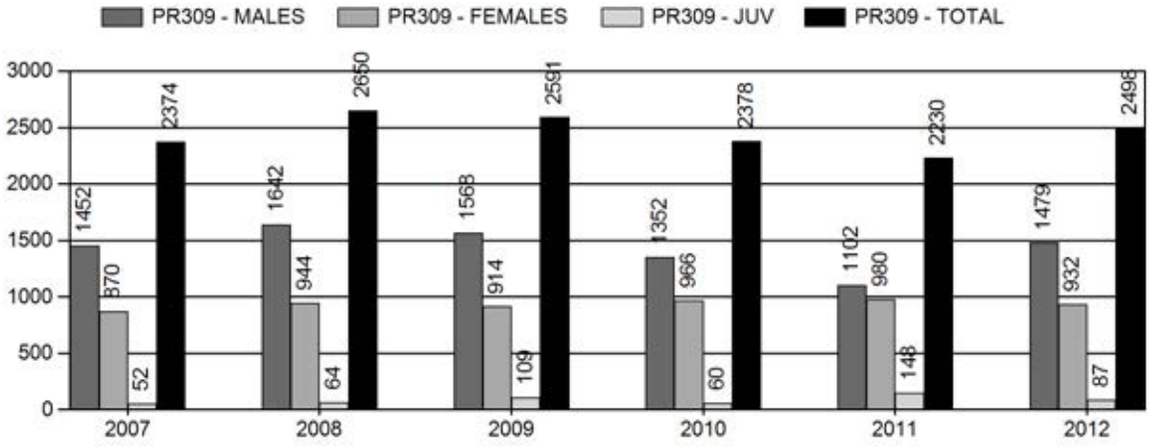
Population Objective:	18,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	97%
Number of years population has been + or - objective in recent trend:	6
Model Date:	05/14/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

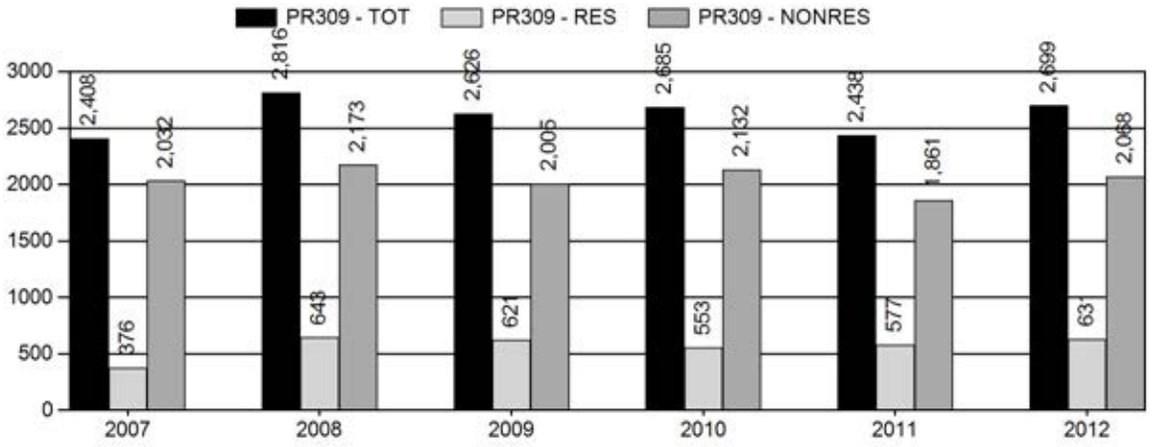
	JCR Year	Proposed
Females ≥ 1 year old:	7.9%	6.3%
Males ≥ 1 year old:	14.9%	16.8%
Juveniles (< 1 year old):	1.1%	0%
Total:	8.0%	6.6%
Proposed change in post-season population:	7.4%	-1.8%



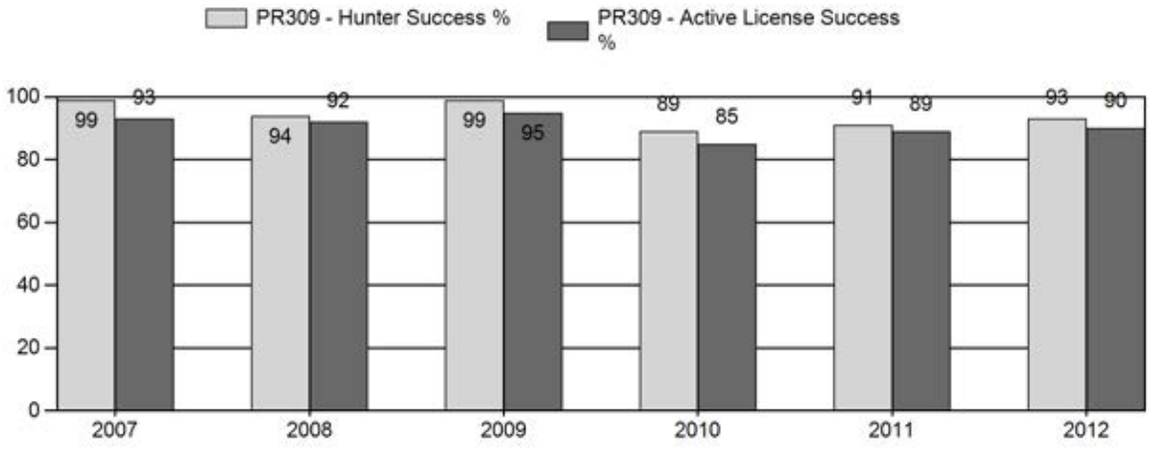
Harvest



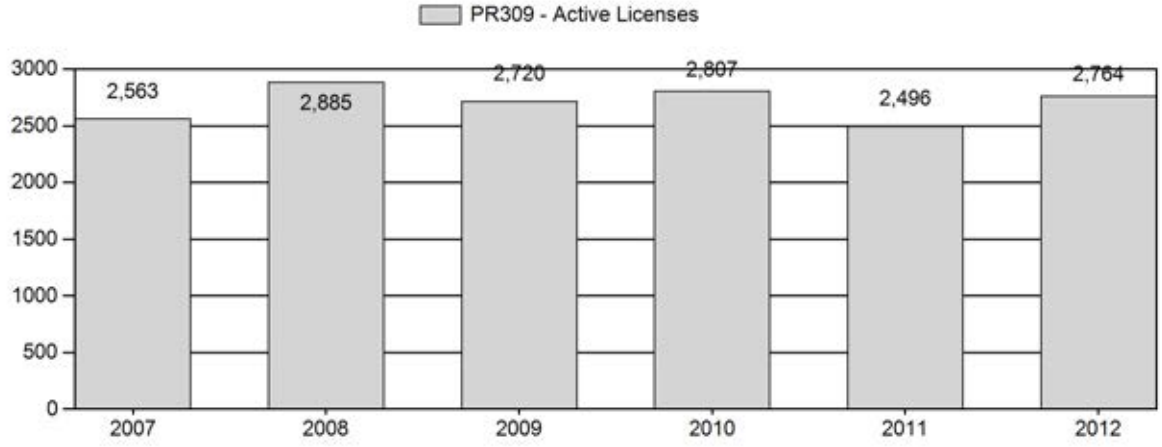
Number of Hunters



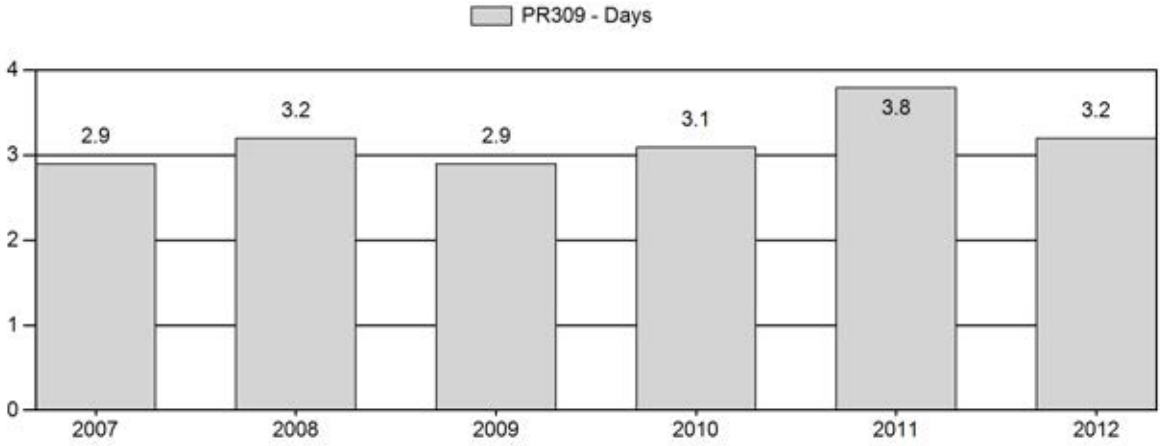
Harvest Success



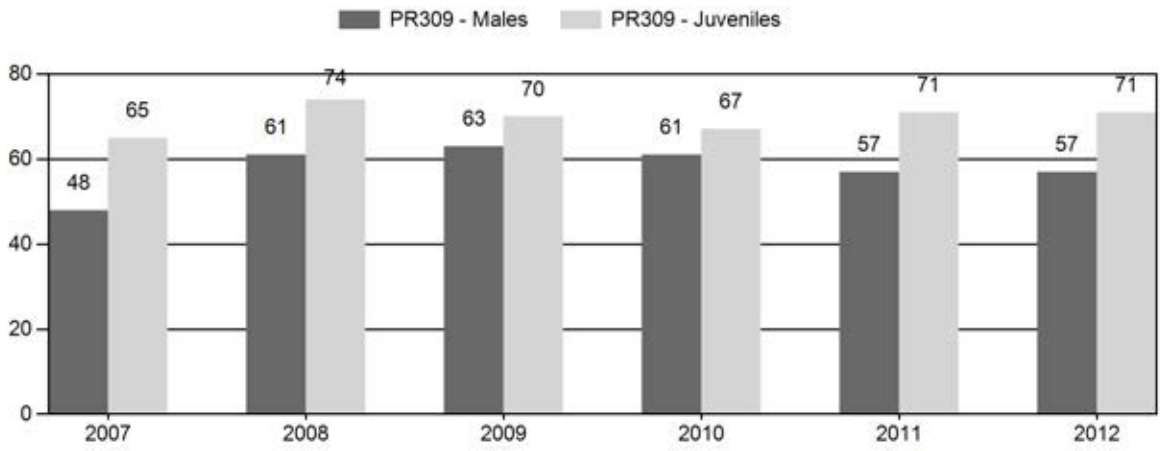
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR309 - PUMPKIN BUTTES

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	40,538	268	231	499	23%	1,030	47%	666	30%	2,195	1,418	26	22	48	± 4	65	± 5	44
2008	41,260	368	495	863	26%	1,408	43%	1,038	31%	3,309	2,276	26	35	61	± 4	74	± 5	46
2009	40,086	254	568	822	27%	1,313	43%	915	30%	3,050	2,918	19	43	63	± 4	70	± 5	43
2010	38,830	248	536	784	27%	1,294	44%	867	29%	2,945	2,740	19	41	61	± 4	67	± 5	42
2011	38,611	172	284	456	25%	796	44%	563	31%	1,815	2,713	22	36	57	± 5	71	± 6	45
2012	38,224	195	188	383	25%	672	44%	479	31%	1,534	2,691	29	28	57	± 6	71	± 7	45

2013 HUNTING SEASONS
PUMPKIN BUTTES PRONGHORN HERD (PR309)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
23	1	Oct. 1	Oct. 31	1,750	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	1,300	Limited quota licenses; doe or fawn
Archery		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
23	1	-250
	6	-200
Herd Unit Total	**1**	**-250**
	6	**-200**

Management Evaluation
Current Postseason Population Management Objective: 18,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~35,300
2013 Proposed Postseason Population Estimate: ~34,700

Herd Unit Issues

The postseason population objective for the Pumpkin Buttes Pronghorn Herd Unit is 18,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1989.

Extensive coal bed methane development has occurred in the herd unit and has resulted in a network of roads and other development associated with the infrastructure required to support coal bed methane extraction. The increased traffic was an issue with hunting in the past, however in recent years, development and activity has tapered off substantially. The more pressing issue in this herd unit will be proper reclamation as these wells are abandoned. The largest issue with achieving adequate harvest in this herd is access, as most of the pronghorn are found on private lands.

Weather

Weather conditions throughout 2012 and into 2013 were extremely dry and warmer than normal. The winters of 2011-2012 and 2012-13 were mild and did not see much for snow accumulation. During the majority of these two winters, the ground was open, with minimal snowpack. As a result over winter survival was high. Although the spring and summer of 2012 were drier than normal, it appears that the fawn to doe ratio did not suffer.

Habitat

The Schoonover habitat transect is located within this herd unit. The utilization is typically very light on this transect. In the fall of 2012, the transect survey showed the average leader growth to be 13mm.

Field Data

This herd has the potential for rapid growth as has been seen in years past. High fawn to doe ratios coupled with limited access have allowed this herd to exceed management objective in the past. In 2011 and 2012 the fawn to doe ratio was up to 71, which is the highest this herd has experienced since 2008. During 2012 classifications, we were unable to meet the objective of 2,720 animals, classifying only 1,534. Hunter satisfaction in 2012 was quite high with 81% of total respondents indicating that they were either satisfied or very satisfied.

Having adequate licenses available is imperative to keep harvest up on this herd when numbers warrant.

Harvest

In 2012 there were 3,500 licenses available, 2,000 Type 1 and 1,500 Type 6. Neither license types sold out by the end of the season. There were 202 Type 1 licenses and 175 Type 6 licenses that went unsold. Hunter success in this herd unit has averaged 90% over the last 5 years, with similar success in preceding years as well. 2012 had an overall success rate of 93%.

Population

The "Constant Juvenile – Constant Adult Mortality Rate" (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd (AIC value 145). The model appears to accurately represent the population trend, and more time will be put into it to assess what possibilities there are for improved accuracy (fair model). It seems that the actual population estimates may be high. The 2012 post-season population estimate was about 35,400. At this point, the model seems to have some potential issues, and this is likely a higher estimate than is actually on the ground. According to the model and also landowner and field personnel observations, since 2006 the population has declined hitting a low in 2012. The last line transect survey was conducted in this herd unit in June 2008, which resulted in an estimated population of 10,600 pronghorn at that time. Additionally, there was a line transect flown in 2005 providing an estimate of 32,909. The model aligns between these widely differing end of year estimates. Unfortunately, there is not information present to calculate the Standard Error. Until or unless this information is found, these line transect estimates are of little use to this model, except to evaluate the model on the point estimates.

Management Strategy

The traditional season in this hunt area has been the entire month of October. This season time and length seems to be adequate to allow a reasonable harvest. The number of both Type 1 and Type 6 licenses were decreased by 250 and 200 respectively. Most landowners have said that the number of animals is below where they would like to see them and there are reports of landowners taking fewer hunters than they have in the past. The majority of landowners that responded to the survey indicate that they feel antelope are either around where they should be or are lower than they would like to see, with only one respondent feeling that they there were too many antelope. Additionally, 2011 and 2012 saw a drastic decrease in number of animals classified as compared to previous years. It is possible that the number of animals classified has decreased in response to conducting all classifications from the ground, and omitting aerial classifications.

If we attain the projected harvest of 2,470 and near normal fawn recruitment, it is projected that the population will only slightly decline.

INPUT	
Species:	Pronghorn
Biologist:	Erika Peckham
Herd Unit & No.:	PR309-PumpkinButtes
Model date:	07/19/12

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	136	145	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	138	147	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	60	171	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	9491	7946	14793	**32230**	9175	5878	13251	**28303**	6994	13846	**20840**				18000
1994	13355	6854	13569	**33778**	12981	4452	11367	**28800**	6405	12803	**19208**				18000
1995	10233	6277	12547	**29057**	9891	4584	10999	**25474**	5976	11907	**17883**				18000
1996	10124	5856	11669	**27649**	10009	4697	10904	**25610**	6226	11990	**18216**				18000
1997	9217	6102	11750	**27069**	9191	4942	11355	**25488**	6312	12302	**18615**				18000
1998	10611	6186	12056	**28853**	10606	5078	12006	**27690**	6739	13232	**19970**				18000
1999	10471	6604	12967	**30042**	10458	5525	12903	**28886**	7120	14025	**21145**				18000
2000	11925	6978	13744	**32647**	11897	5818	13549	**31264**	7672	14896	**22568**				18000
2001	11511	7518	14598	**33627**	11475	6394	14364	**32234**	8118	15557	**23675**				18000
2002	14060	7956	15246	**37262**	14039	6673	14832	**35545**	8888	16498	**25386**				18000
2003	12346	8710	16168	**37225**	12315	7329	15837	**35481**	9128	17079	**26207**				18000
2004	13445	8945	16737	**39127**	13407	7610	16228	**37245**	9613	17642	**27255**				18000
2005	14933	9421	17289	**41642**	14840	8065	16693	**39599**	10306	18339	**28645**	32909			18000
2006	14503	10100	17972	**42575**	14467	8564	17130	**40160**	10689	18659	**29348**				18000
2007	11823	10475	18285	**40584**	11766	8878	17328	**37973**	10416	18273	**28688**				18000
2008	13201	10207	17907	**41316**	13131	8401	16869	**38401**	10230	18115	**28345**	18039			18000
2009	12372	10025	17753	**40149**	12252	8300	16747	**37299**	9950	17812	**27762**				18000
2010	11695	9751	17456	**38902**	11629	8264	16393	**36286**	9830	17369	**27198**				18000
2011	12039	9633	17021	**38693**	11876	8421	15943	**36240**	9659	17133	**26792**				18000
2012	11968	9466	16790	**38224**	11867	7817	15787	**35471**	9565	16870	**26435**				18000
2013	11635	9374	16533	**37541**	11530	7797	15495	**34823**							18000
2014															18000
2015															18000
2016															18000
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.90		
1994	0.40			0.90		
1995	0.40			0.90		
1996	0.40			0.90		
1997	0.40			0.90		
1998	0.40			0.90		
1999	0.40			0.90		
2000	0.40			0.90		
2001	0.40			0.90		
2002	0.40			0.90		
2003	0.40			0.90		
2004	0.40			0.90		
2005	0.40			0.90		
2006	0.40			0.90		
2007	0.40			0.90		
2008	0.40			0.90		
2009	0.40			0.90		
2010	0.40			0.90		
2011	0.40			0.90		
2012	0.40			0.90		
2013	0.40			0.90		
2014						
2015						
2016						
2017						
2018						
2019						
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2021						
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2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.400
Adult Survival =	0.904
Initial Total Male Pop/10,000 =	0.795
Initial Female Pop/10,000 =	1.479

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		64.16	2.52	53.71	50.45	2.14	1880	1402	288	3570	26.0	10.4
1994		98.43	4.02	50.51	50.99	2.52	2184	2002	340	4526	35.1	16.2
1995		81.56	3.25	50.03	45.25	2.17	1539	1407	311	3257	27.0	12.3
1996		86.76	3.57	50.19	56.50	2.64	1054	695	104	1853	19.8	6.6
1997		78.44	4.09	51.93	67.07	3.66	1054	359	24	1437	19.0	3.4
1998		88.01	3.92	51.31	50.65	2.66	1007	46	4	1057	17.9	0.4
1999		80.75	3.70	50.93	53.24	2.77	981	58	12	1051	16.3	0.5
2000		86.76	3.64	50.77	50.57	2.49	1054	178	26	1258	16.6	1.4
2001		78.85	3.84	51.50	66.28	3.40	1022	213	32	1267	15.0	1.6
2002		92.22	4.41	52.19	49.40	2.84	1166	376	19	1561	16.1	2.7
2003		76.36	3.49	53.87	44.57	2.42	1256	301	28	1585	15.9	2.0
2004		80.33	3.75	53.45	53.68	2.83	1214	463	34	1711	14.9	3.0
2005		86.37	4.09	54.49	65.66	3.36	1232	542	84	1858	14.4	3.4
2006		80.70	3.87	56.20	41.27	2.45	1397	765	33	2195	15.2	4.7
2007		64.66	3.22	57.29	48.45	2.64	1452	870	52	2374	15.2	5.2
2008		73.72	3.02	57.00	61.29	2.65	1642	944	64	2650	17.7	5.8
2009		69.69	3.00	56.47	62.60	2.78	1568	914	109	2591	17.2	5.7
2010		67.00	2.94	55.86	60.59	2.74	1352	966	60	2378	15.3	6.1
2011		70.73	3.89	56.59	57.29	3.36	1102	980	148	2230	12.6	6.3
2012		71.28	4.26	56.38	56.99	3.65	1499	912	92	2503	17.4	6.0
2013		70.37	3.31	56.70	60.26	2.97	1433	943	95	2471	16.8	6.3
2014												
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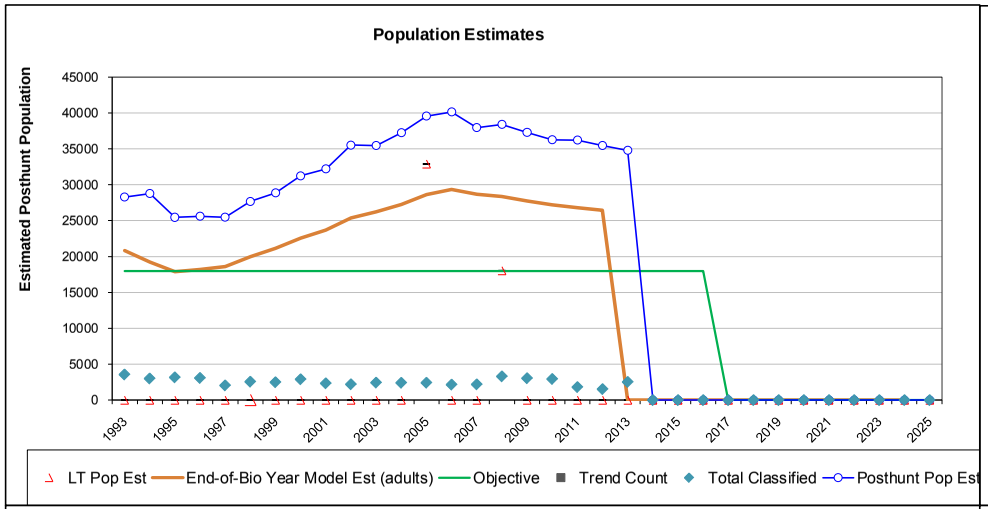
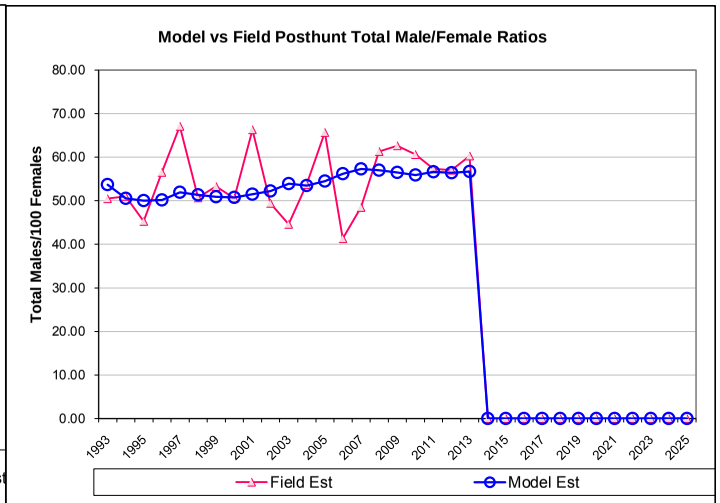
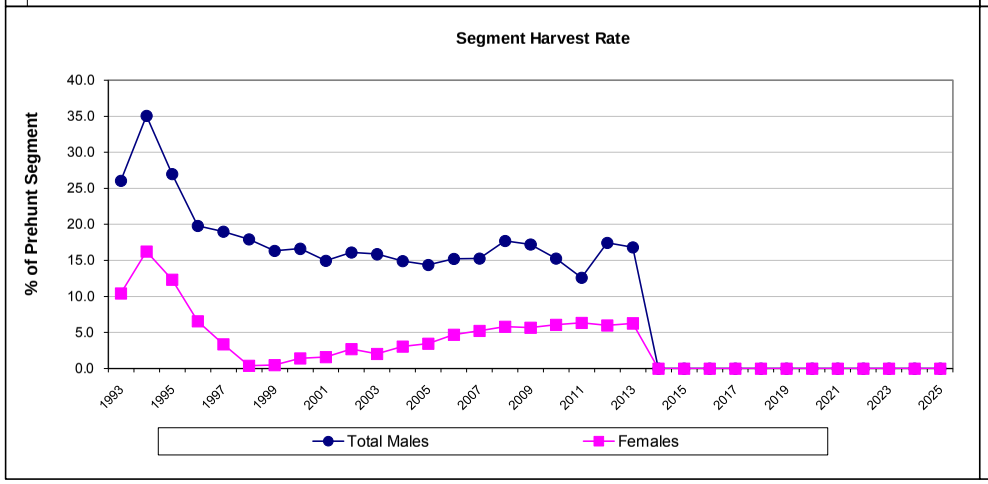
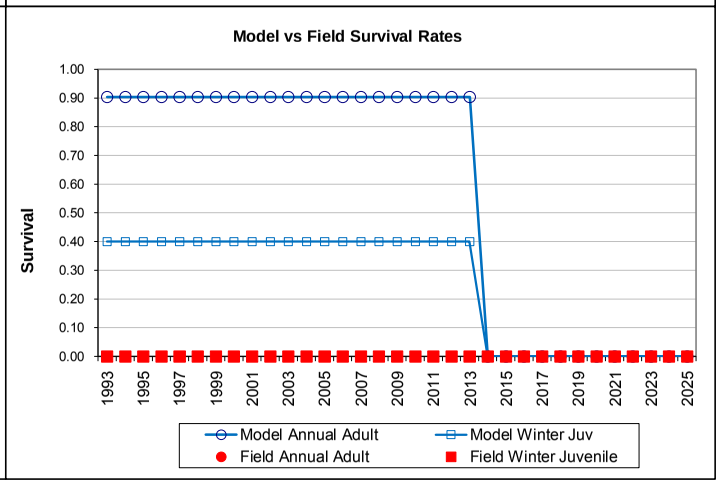
FIGURES









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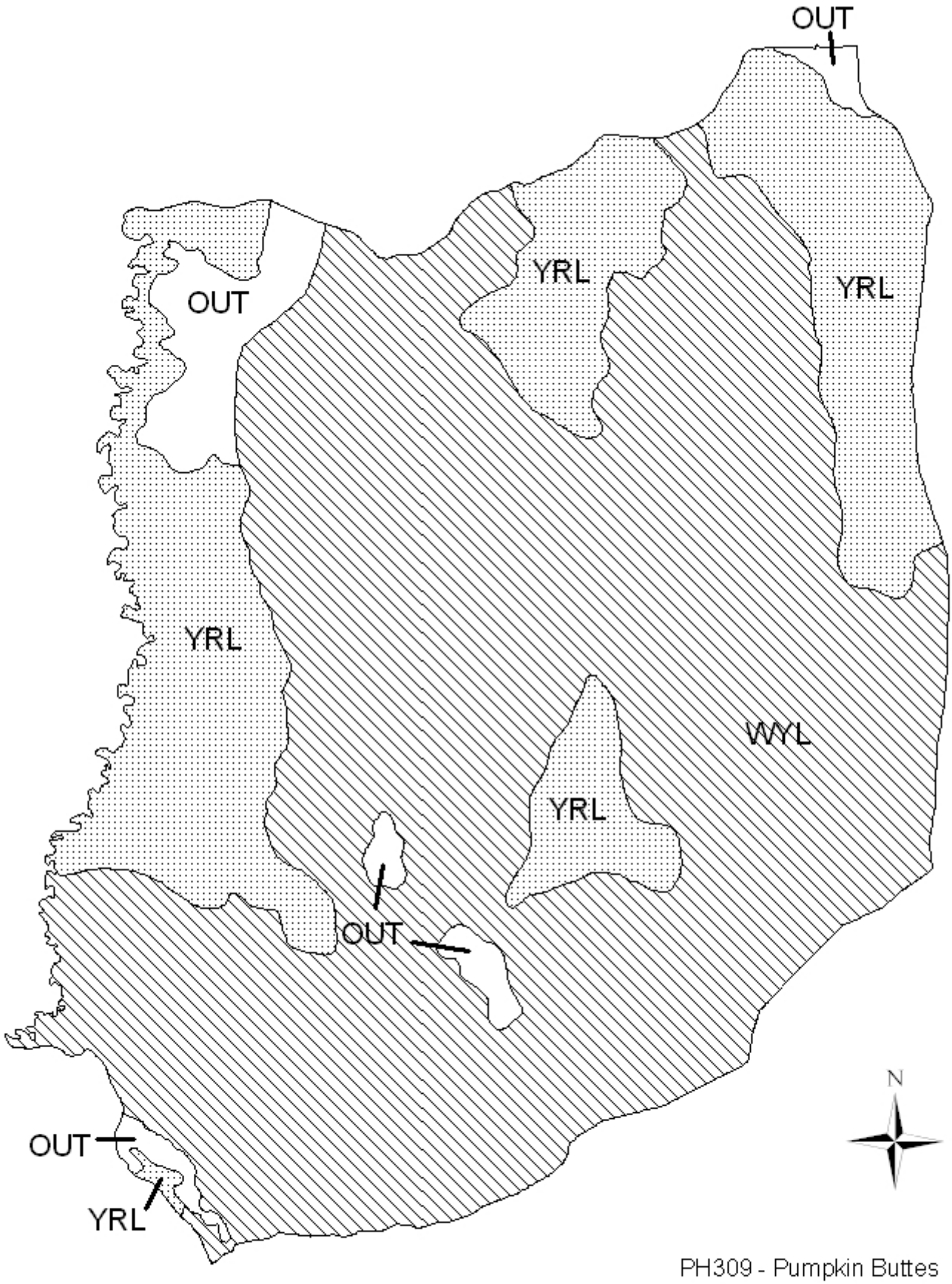


PH309 - Pumpkin Buttes
HA 23
Revised - 3/87

2012 - JCR Evaluation Form

SPECIES: Pronghorn PERIOD: 6/1/2012 - 5/31/2013

HERD: PR310 - UPPER POWDER RIVER

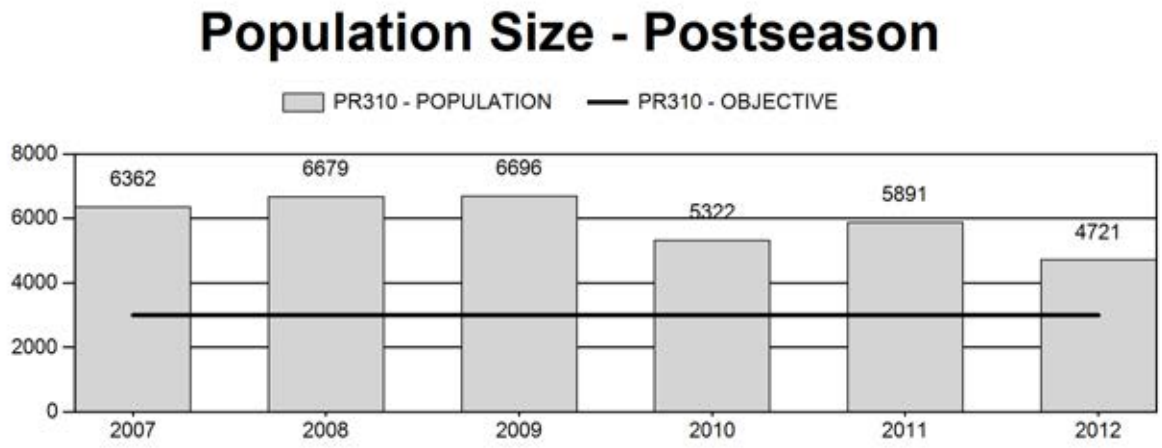
HUNT AREAS: 20 PREPARED BY: DAN THIELE

	2007 - 2011 Average	2012	2013 Proposed
Population:	6,190	4,721	3,325
Harvest:	826	907	1,200
Hunters:	852	977	1,250
Hunter Success:	97%	93%	96%
Active Licenses:	951	1,072	1,350
Active License Percent:	87%	85%	89%
Recreation Days:	3,018	3,453	4,500
Days Per Animal:	3.7	3.8	3.8
Males per 100 Females	66	74	
Juveniles per 100 Females	71	96	

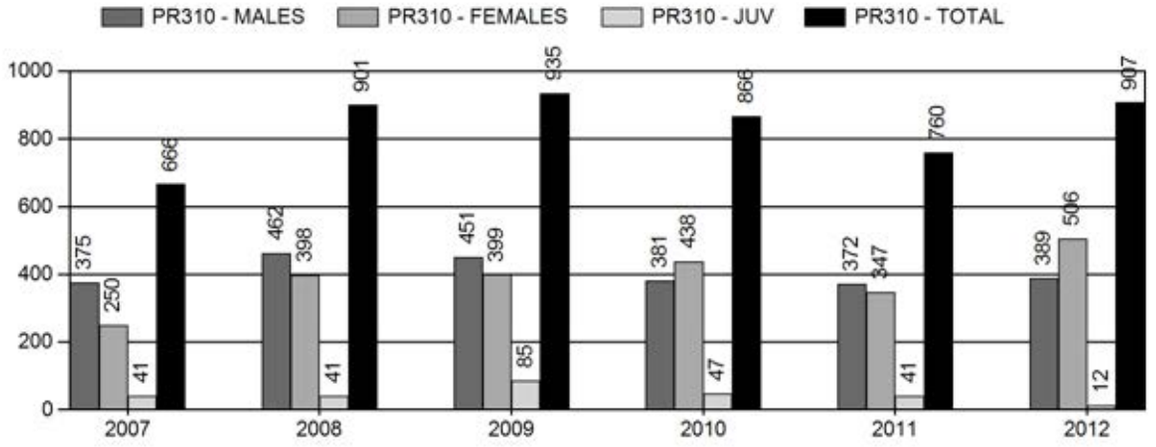
Population Objective:	3,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	57%
Number of years population has been + or - objective in recent trend:	10
Model Date:	5/23/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

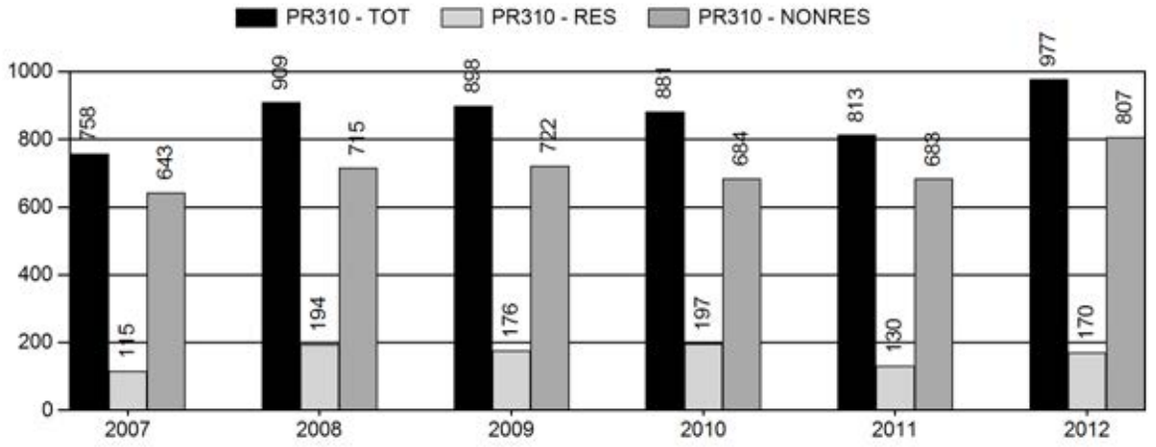
	JCR Year	Proposed
Females ≥ 1 year old:	16%	33%
Males ≥ 1 year old:	22%	48%
Juveniles (< 1 year old):	2%	0%
Total:	14%	26%
Proposed change in post-season population:	-7%	-30%



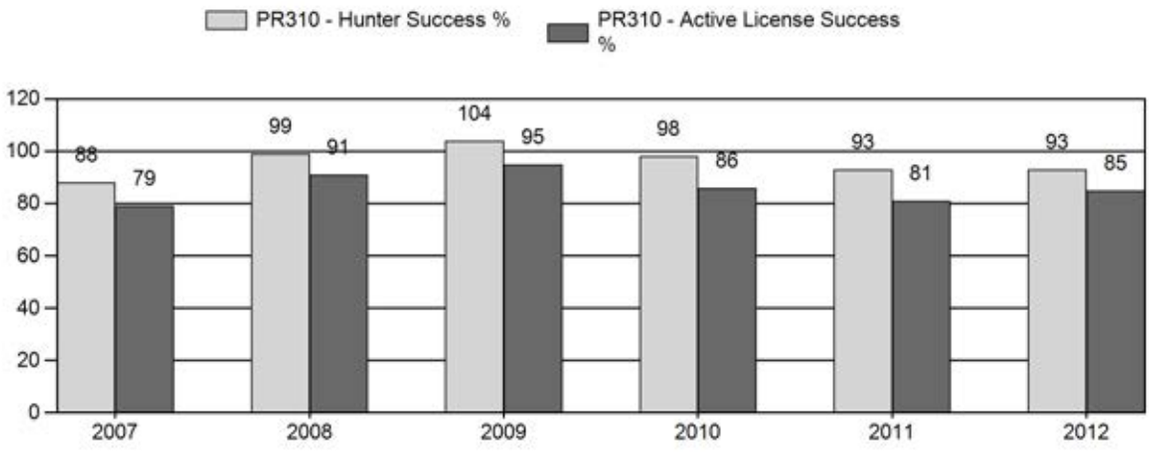
Harvest



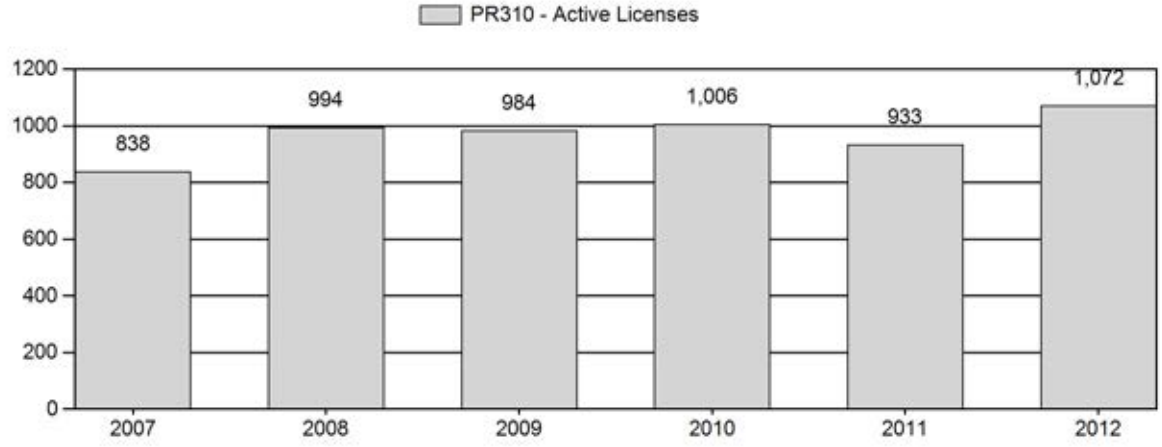
Number of Hunters



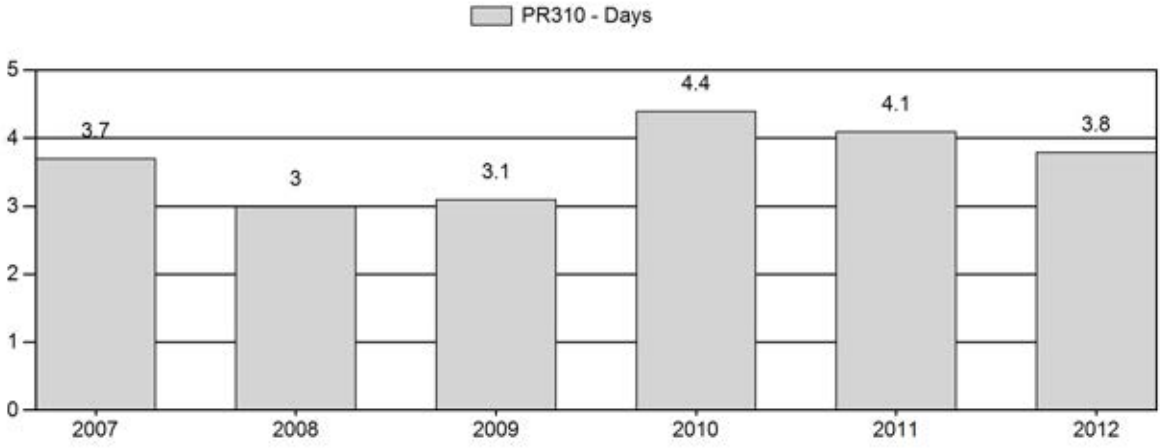
Harvest Success



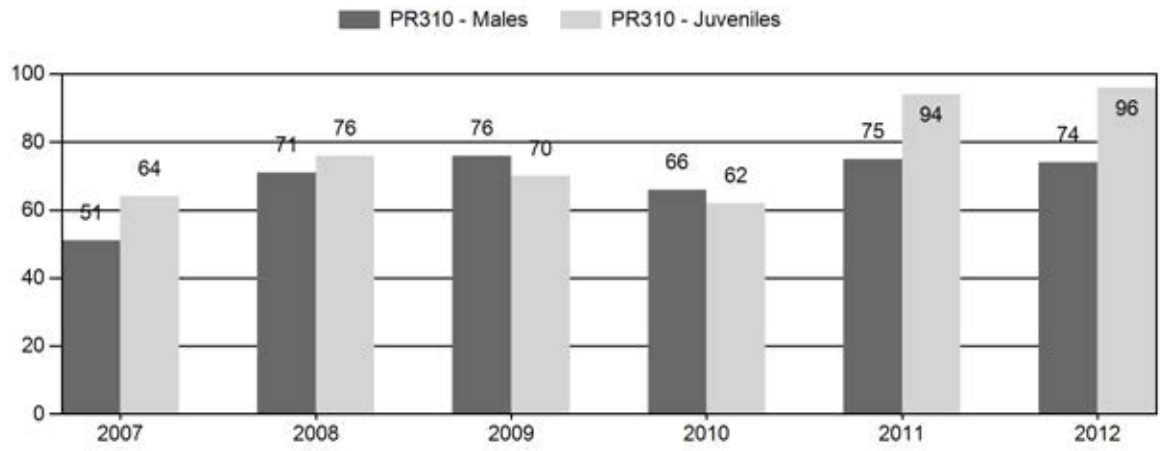
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR310 - UPPER POWDER RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	7,094	223	430	653	24%	1,293	47%	832	30%	2,778	1,273	17	33	51	± 3	64	± 4	43
2008	7,670	173	555	728	29%	1,031	40%	788	31%	2,547	2,584	17	54	71	± 5	76	± 5	45
2009	7,725	220	615	835	31%	1,100	41%	771	28%	2,706	2,561	20	56	76	± 5	70	± 4	40
2010	6,275	126	501	627	29%	957	44%	594	27%	2,178	2,008	13	52	66	± 4	62	± 4	38
2011	6,727	76	282	358	28%	477	37%	449	35%	1,284	3,247	16	59	75	± 8	94	± 9	54
2012	5,718	131	300	431	28%	579	37%	556	36%	1,566	2,802	23	52	74	± 7	96	± 8	55

2013 HUNTING SEASONS
UPPER POWDER RIVER PRONGHORN HERD (PR310)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
20	1	Oct. 15	Nov. 15	800	Limited quota licenses; any antelope
	6	Oct. 15	Nov. 15	800	Limited quota licenses; doe or fawn
Archery		Aug. 15	Oct. 14		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
20	6	+100
Total	**6**	**+100**

Management Evaluation
Current Postseason Population Management Objective: 3,000
Management Strategy: Recreational
2012 Postseason Population Estimate: 4,700
2013 Proposed Postseason Population Estimate: ~3,300

Herd Unit Issues

The Upper Powder River Pronghorn Herd Unit post-season management objective is 3,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1989 but are being reviewed this spring.

Area 20 is largely private land with limited public land hunting opportunity resulting in a disproportionate amount of hunting pressure on accessible public land. Restrictive access to private land and landlocked public land aggravates this situation. In recent years several ranches have changed ownership resulting in reduced hunting access. Typically, traditional ranching operations are bought by nonresident landowners with more conservative hunting philosophies. Increased outfitter leasing of ranches reduces the number of hunters a given ranch will take. These factors contribute to high buck ratios, difficulty in placing hunters and attaining needed harvest. Additionally, pronghorn are often displaced from ranches that allow hunting to neighboring ranches that take limited numbers of hunters, or no hunters.

Weather

Weather in the area of the Upper Powder River Herd Unit during 2012 turned extremely warm and dry after several good moisture years. The Palmer drought index for Climate Division 5 (Powder, Little Missouri and Tongue drainages) showed "very moist" conditions for January 2012 but progressed to "extreme drought" by January 2013. The National Weather Service in Sheridan reported 2012 as the driest year since 1960 and the 4th driest year in 105 years with 9.53

inches of precipitation (14.16" ave). It was also the 6th warmest year on record with an average temperature of 48.1° F, the warmest year since 2006. With the late onset of drought in 2012, fawn recruitment was not significantly affected.

Habitat

There are no established habitat transects in this herd unit. However, in two adjacent herd units winter utilization on two Wyoming big sagebrush transects during the 2011-12 winter was very light (less than 5% of leaders browsed) as pronghorn were dispersed over winter/yearlong range. Production measured in September 2012 averaged 12 mm and 8 mm per leader compared to 30 mm and 33 mm per leader in 2011, respectively. Winter conditions were mild so above average mortality was not observed.

Field Data

Classifications the last two years showed fawn ratios exceeding 90:100 suggesting this herd should be increasing even with the increased doe harvest. Buck ratios have fluctuated but are trending up due to the lack of Type 1 license sales. A 2012 line transect survey indicated that pronghorn numbers had decreased 50% from the 2007 line transect survey. However, there is question as to the accuracy of this estimate. Sixty-six percent of responding landowners surveyed following the hunting season indicated that numbers were acceptable while 10% desired more pronghorn and 10% thought numbers were too high. The trend over the last six years suggests pronghorn numbers are decreasing. Hunters were highly satisfied with the 2012 hunting season with 89% expressing satisfaction with their hunt.

Harvest Data

Harvest has fluctuated but remained relatively stable over the past five years. Buck harvest has decreased since 2008 while doe/fawn harvest reached a six year high in 2012. Hunter numbers, hunter success and hunter effort have likewise remained relatively stable. Active license success has exceeded 80% the last five years. Thirty-three percent of Type 1 licenses (273) and three percent of Type 6 licenses (22) went unsold.

Population

This population is estimated at 4,700 pronghorn, well above the population objective. The population estimate was generated with the newly adopted EXCEL spreadsheet model. The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) model was chosen as it produced the lowest AIC value (77). The model attempts to track 10 line transect survey estimates, the last two of which suggest a significant decrease in this population. The model is considered to be a fair model, indicating this population has decreased 30% from its six year high in 2009. It's questionable whether this large of decrease occurred even with the lower fawn ratios from 2007 to 2010. No severe winter mortality has been documented. Harvest reached a six year high in 2010 while hunter success and hunter effort remained stable. There remains some question about the validity of the 2012 line transect survey which contributed to this year's lower population estimate. The EXCEL model generated a population estimate that was about 40% of last year's POP-II estimate.

Management Summary

The 2013 season features an increase of 100 Type 6 licenses to continue to address some landowner concerns that the population is too high. Given the high 2011 and 2012 fawn ratios it is reasonable to expect this population to increase. If drought persists, fawn production will likely decrease in 2013. Nearly all Type 6 licenses sold in 2012 so the change will address a potential increase in demand. A harvest of 1,200 pronghorn is predicted if all licenses sell resulting in a 2013 postseason population of 3,300 pronghorn. However, it is unlikely all licenses will sell.

INPUT	
Species:	Pronghorn
Biologist:	Dan Thiele
Herd Unit & No.:	Upper Powder River (310)
Model date:	05/23/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	107	116	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	68	77	☑ SCJ,SCA	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	61	180	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	1213	1908	2228	**5349**	1185	1415	1796	**4395**	1403	1746	**3149**				3000
1994	1204	1375	1711	**4290**	1119	735	1224	**3077**	1001	1451	**2452**	1723	965		3000
1995	1323	981	1422	**3725**	1219	554	1147	**2920**	912	1454	**2365**	1906	1071		3000
1996	1149	893	1425	**3467**	1103	597	1323	**3024**	927	1592	**2519**	1188	276		3000
1997	1294	909	1560	**3763**	1294	611	1472	**3377**	1021	1807	**2828**				3000
1998	1550	1001	1771	**4321**	1544	667	1746	**3958**	1167	2158	**3325**	3382	688		3000
1999	1620	1144	2115	**4879**	1599	840	2043	**4483**	1344	2432	**3776**				3000
2000	1661	1317	2384	**5362**	1647	946	2225	**4819**	1290	2442	**3733**	1954	442		3000
2001	1447	1265	2393	**5105**	1424	876	2235	**4535**	1292	2516	**3808**	2496	1386		3000
2002	2073	1266	2466	**5805**	2054	856	2316	**5226**	1528	2846	**4374**				3000
2003	2646	1497	2790	**6933**	2631	1130	2628	**6389**	1787	3130	**4917**	5102	1150		3000
2004	2513	1751	3068	**7332**	2488	1426	2898	**6813**	2217	3531	**5748**				3000
2005	3064	2173	3460	**8697**	2991	1886	3257	**8133**	2200	3415	**5615**	6710	1684		3000
2006	2546	2156	3346	**8049**	2530	1791	3076	**7397**	2030	3170	**5200**				3000
2007	1999	1989	3107	**7094**	1954	1577	2832	**6362**	2116	3237	**5353**	7676	1366		3000
2008	2424	2074	3172	**7670**	2379	1566	2734	**6679**	2267	3302	**5568**				3000
2009	2268	2222	3236	**7725**	2174	1725	2797	**6696**	1857	2805	**4662**				3000
2010	1706	1820	2749	**6275**	1654	1401	2267	**5322**	1839	2589	**4428**				3000
2011	2388	1802	2537	**6727**	2343	1393	2156	**5891**	1631	2145	**3776**	3629	714		3000
2012	2018	1598	2102	**5718**	2005	1170	1545	**4721**	1398	1895	**3293**				3000
2013	1418	1370	1857	**4645**	1363	710	1252	**3325**							3000
2014															3000
2015															3000
2016															3000
2017															3000
2018															3000
2019															3000
2020															3000
2021															3000
2022															3000
2023															3000
2024															3000
2025															3000

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.86		
1994	0.80			0.86		
1995	0.80			0.86		
1996	0.80			0.86		
1997	0.80			0.86		
1998	0.80			0.86		
1999	0.80			0.86		
2000	0.61			0.86		
2001	0.80			0.86		
2002	0.80			0.86		
2003	0.63			0.86		
2004	0.80			0.86		
2005	0.40			0.86		
2006	0.40			0.86		
2007	0.80			0.86		
2008	0.80			0.86		
2009	0.40			0.86		
2010	0.80			0.86		
2011	0.40			0.86		
2012	0.65			0.86		
2013	0.65			0.86		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.650
Adult Survival =	0.859
Initial Total Male Pop/10,000 =	0.191
Initial Female Pop/10,000 =	0.223

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		54.47	3.01	85.62	86.22	4.16	448	393	26	867	25.8	19.4
1994		70.35	4.17	80.37	75.73	4.40	582	443	77	1102	46.6	28.5
1995		92.99	6.48	68.96	67.76	5.15	388	250	94	732	43.5	19.3
1996		80.62	5.16	62.71	55.58	3.98	269	92	41	402	33.1	7.1
1997		82.96	5.14	58.25	59.48	4.06	271	80	0	351	32.8	5.6
1998		87.53	4.74	56.52	69.86	4.03	303	22	5	330	33.3	1.4
1999		76.61	4.30	54.09	61.01	3.67	276	65	19	360	26.5	3.4
2000		69.70	4.13	55.26	58.30	3.65	337	144	13	494	28.1	6.6
2001		60.47	3.21	52.83	56.85	3.08	353	144	21	518	30.7	6.6
2002		84.05	4.23	51.33	53.87	3.10	373	136	17	526	32.4	6.1
2003		94.84	4.55	53.68	56.39	3.14	334	147	13	494	24.5	5.8
2004		81.91	3.47	57.09	56.14	2.66	296	154	22	472	18.6	5.5
2005		88.56	3.67	62.79	69.38	3.08	261	185	67	513	13.2	5.9
2006		76.10	3.21	64.43	68.56	2.98	332	246	15	593	16.9	8.1
2007		64.35	2.86	64.03	50.50	2.42	375	250	41	666	20.7	8.9
2008		76.43	3.62	65.39	70.61	3.42	462	398	41	901	24.5	13.8
2009		70.09	3.29	68.66	75.91	3.48	451	399	85	935	22.3	13.6
2010		62.07	3.24	66.21	65.52	3.37	381	438	47	866	23.0	17.5
2011		94.13	6.19	71.01	75.05	5.25	372	347	41	760	22.7	15.0
2012		96.03	5.70	76.05	74.44	4.74	389	506	12	907	26.8	26.5
2013		76.36	4.04	73.74	72.12	3.88	600	550	50	1200	48.2	32.6
2014												
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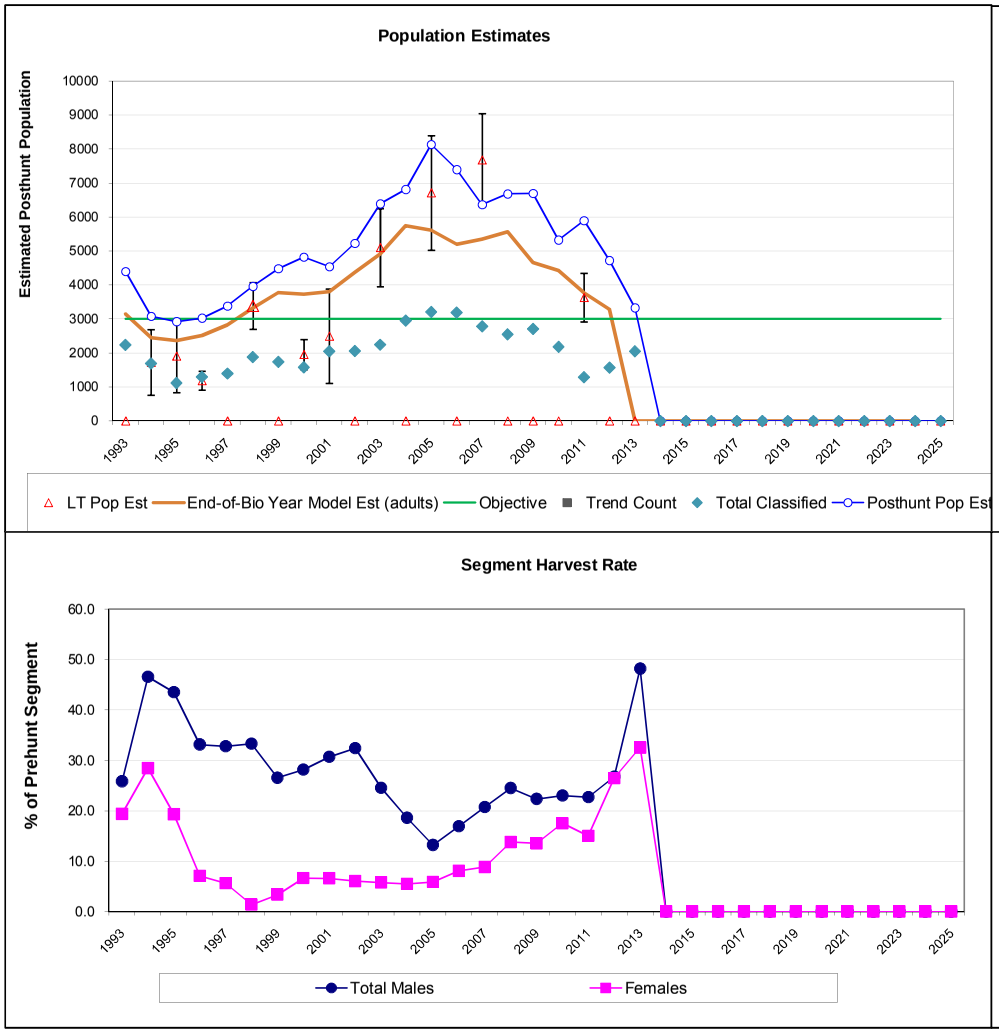
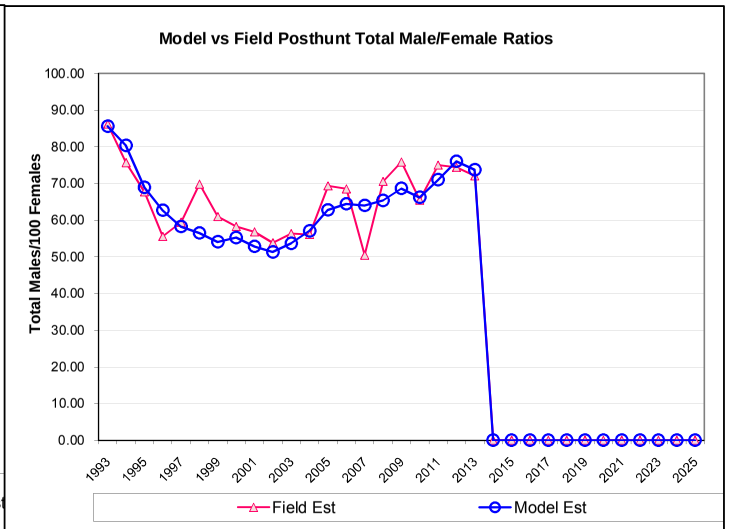
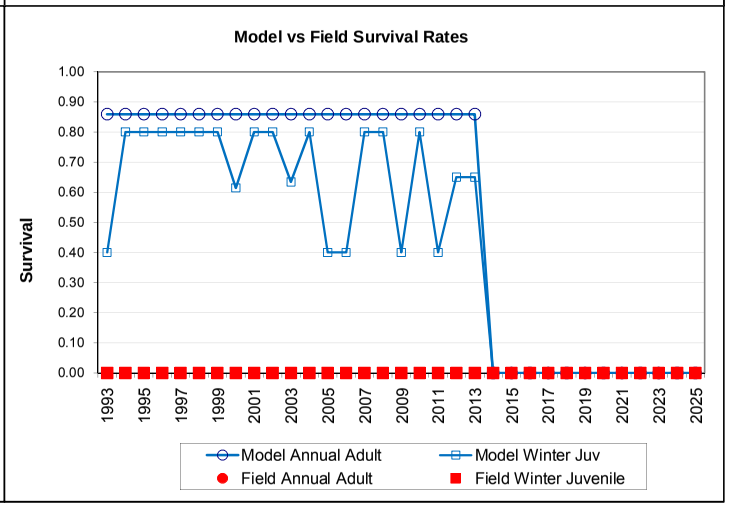
FIGURES







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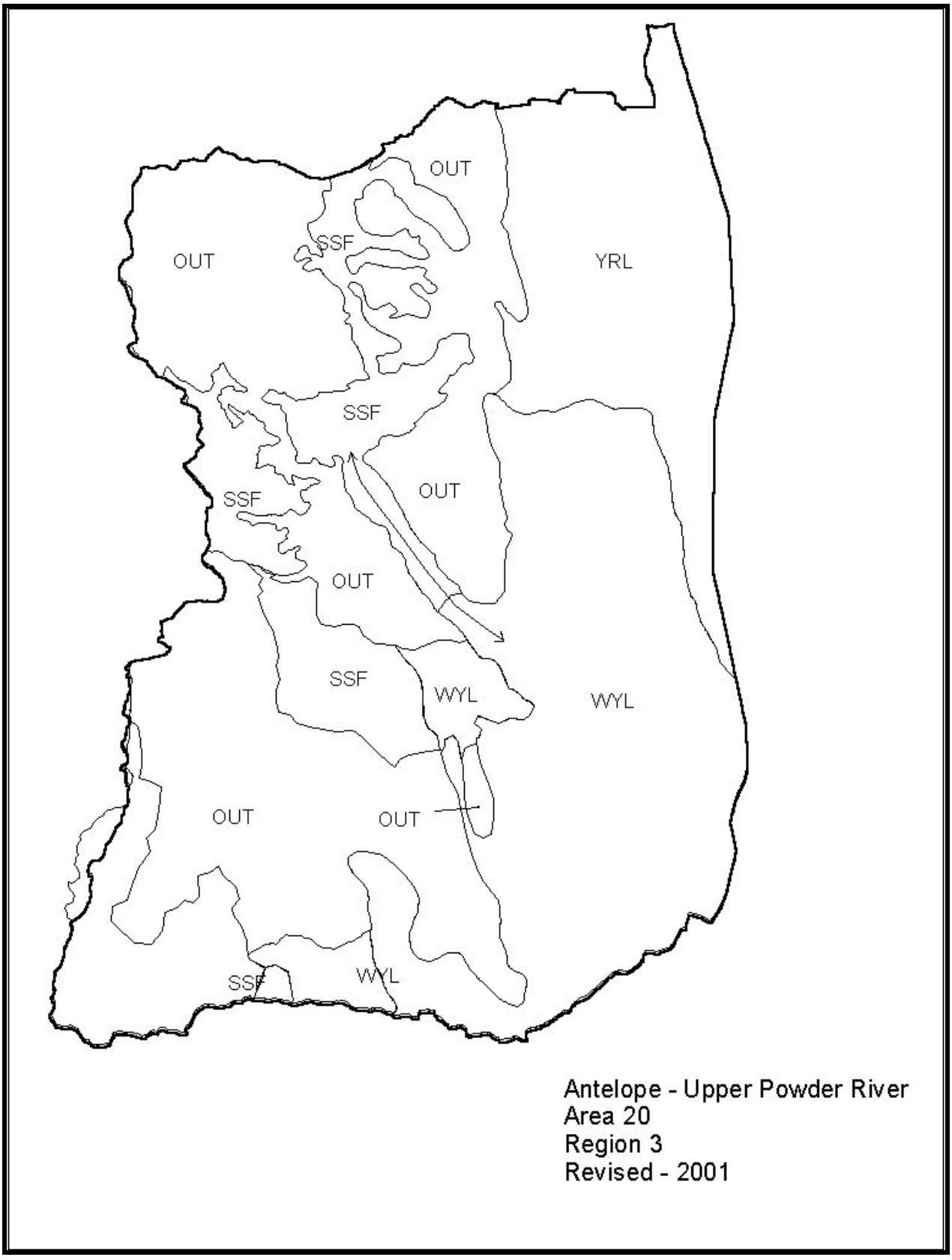
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Antelope - Upper Powder River
Area 20
Region 3
Revised - 2001

2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR316 - HIGHLIGHT

HUNT AREAS: 24

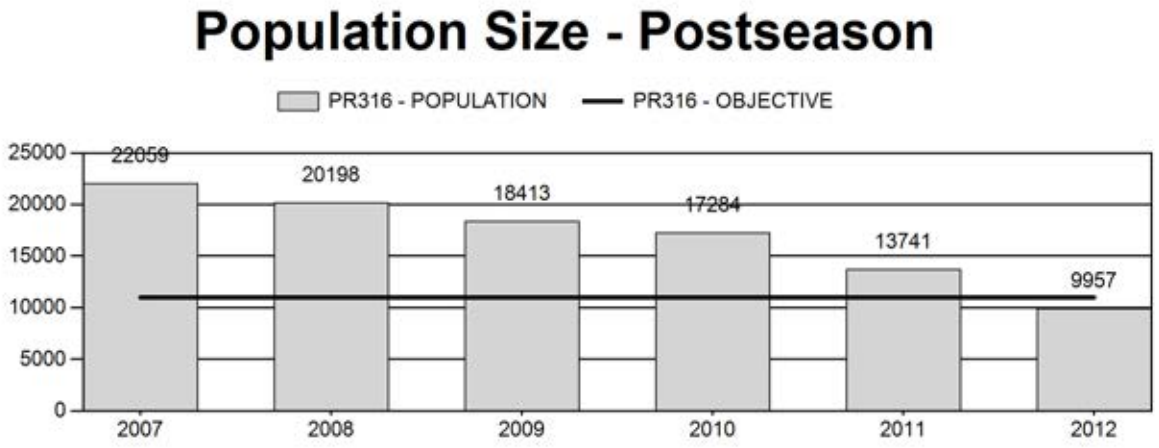
PREPARED BY: ERIKA PECKHAM

	2007 - 2011 Average	2012	2013 Proposed
Population:	18,339	9,957	10,020
Harvest:	1,112	884	810
Hunters:	1,184	1,076	1,000
Hunter Success:	94%	82%	81%
Active Licenses:	1,269	1,119	1,020
Active License Percent:	88%	79%	79%
Recreation Days:	3,713	3,472	3,350
Days Per Animal:	3.3	3.9	4.1
Males per 100 Females	65	53	
Juveniles per 100 Females	61	47	

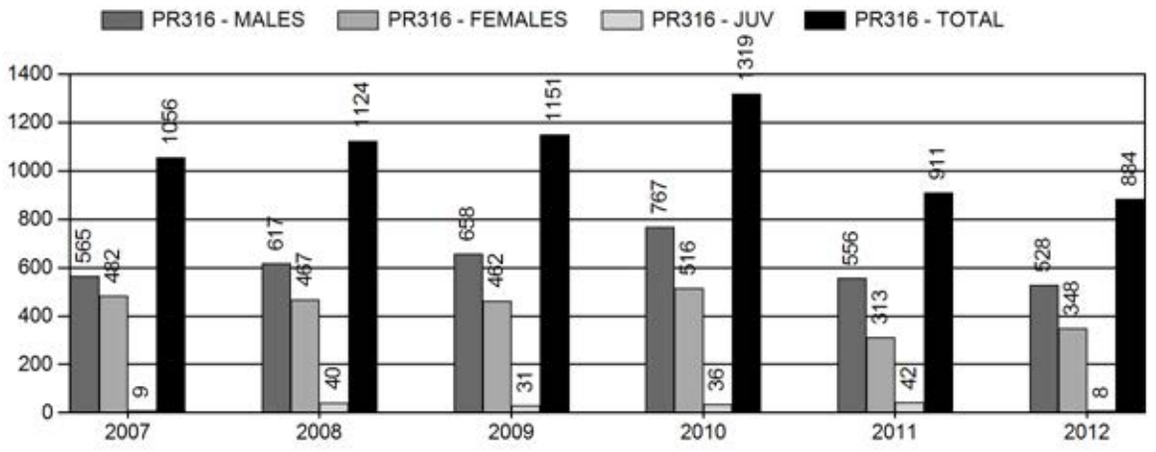
Population Objective:	11,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-9.5%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/20/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

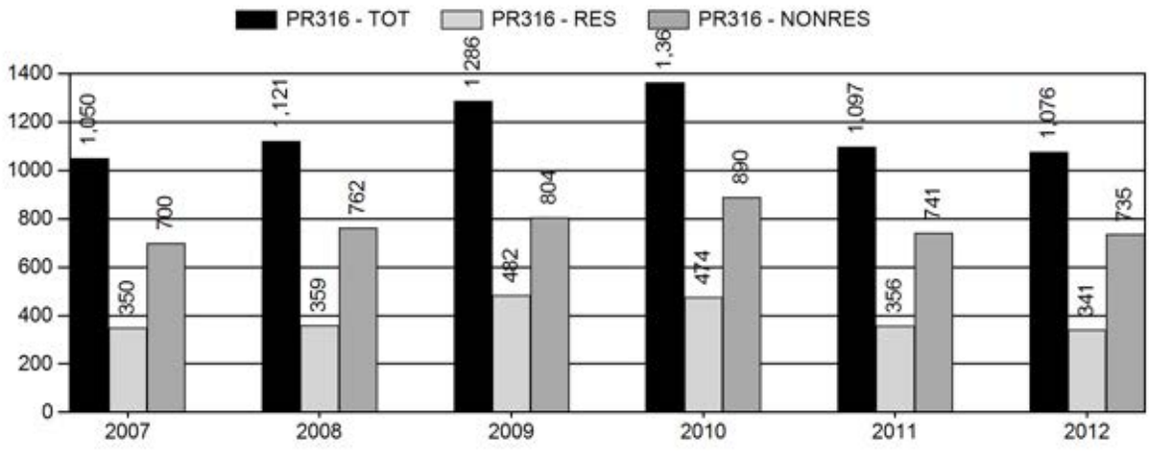
	JCR Year	Proposed
Females ≥ 1 year old:	7%	6.7%
Males ≥ 1 year old:	15%	19.3%
Juveniles (< 1 year old):	1%	0%
Total:	8%	7.4%
Proposed change in post-season population:	2%	-8.1%



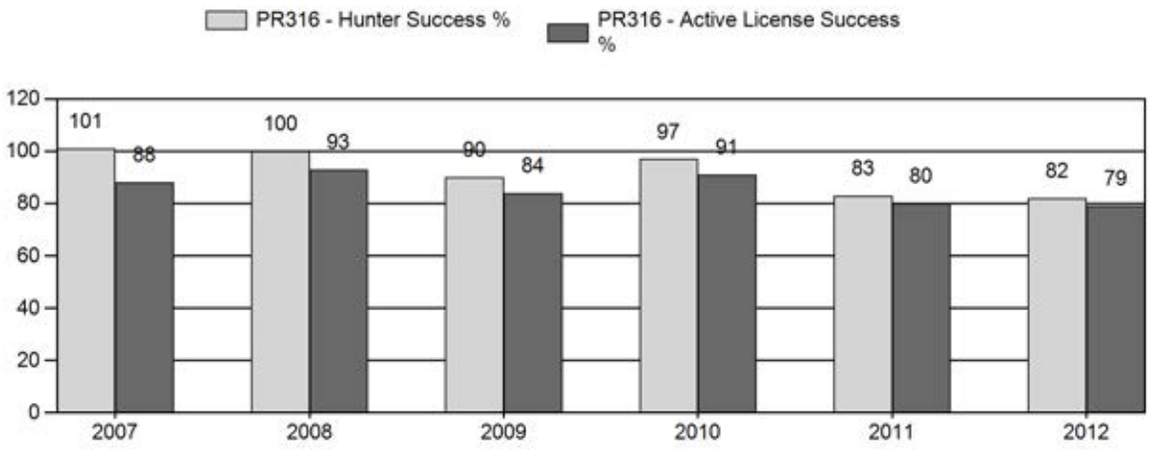
Harvest



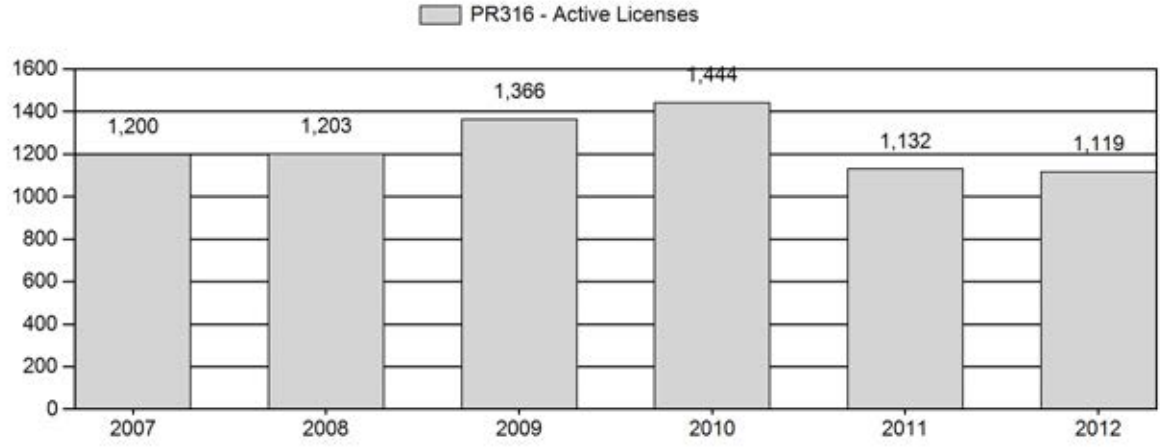
Number of Hunters



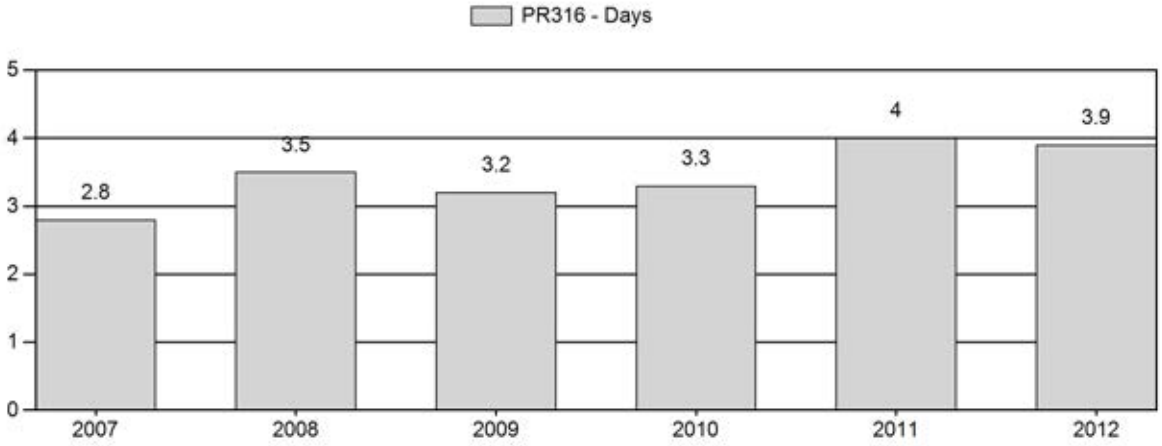
Harvest Success



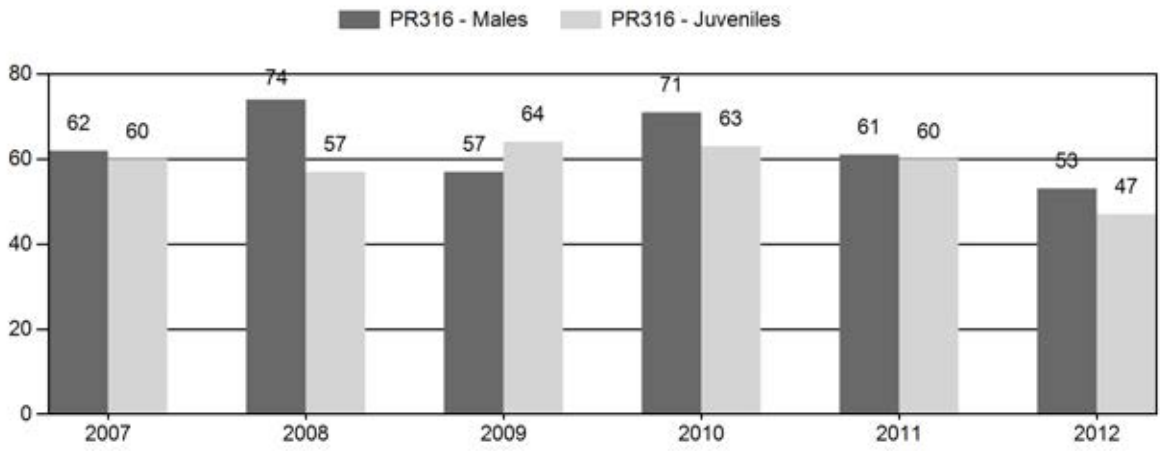
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR316 - HIGHLIGHT

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	24,670	193	455	648	28%	1,038	45%	626	27%	2,312	1,960	19	44	62	± 5	60	± 5	37
2008	23,113	307	450	757	32%	1,022	43%	580	25%	2,359	2,040	30	44	74	± 6	57	± 5	33
2009	21,263	134	510	644	26%	1,133	45%	728	29%	2,505	1,899	12	45	57	± 4	64	± 5	41
2010	19,900	168	530	698	30%	981	43%	621	27%	2,300	2,710	17	54	71	± 5	63	± 5	37
2011	16,194	101	316	417	28%	681	45%	409	27%	1,507	1,975	15	46	61	± 6	60	± 6	37
2012	10,915	116	155	271	27%	509	50%	238	23%	1,018	1,975	23	30	53	± 6	47	± 6	31

2013 HUNTING SEASONS
HIGHLIGHT PRONGHORN HERD (PR316)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
24	1	Oct. 1	Oct. 31	700	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	400	Limited quota licenses; doe or fawn
Archery		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
24	1	-100
	6	-100
Herd Unit Total	**1**	**-100**
	6	**-100**

Management Evaluation
Current Postseason Population Management Objective: 11,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~10,000
2013 Proposed Postseason Population Estimate: ~10,000

Herd Unit Issues

The postseason population objective for the Highlight Pronghorn Herd Unit is 11,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1994. The largest issue with achieving adequate harvest in this herd is access, as most of the pronghorn are found on private lands.

Weather

Weather conditions throughout 2012 and into 2013 were extremely dry and warmer than normal. The winters of 2011-2012 and 2012-13 were mild and did not see much for snow accumulation. During the majority of these two winters, the ground was open, with minimal snowpack. As a result over winter survival was high. Although the spring and summer of 2012 were drier than normal, it appears that the fawn to doe ratio did not suffer.

Habitat

There is no habitat transect located within this herd unit. The Schoonover habitat transect is the closest one to this herd unit and utilization is typically very light on this transect. In the fall of 2012, the transect survey showed the average leader growth to be 13mm.

Field Data

In past times, this herd has the potential for rapid growth. High fawn to doe ratios coupled with limited access have allowed this herd to exceed management objective in the past. However, at this time, the population is likely below objective. In 2012 there were 1,300 licenses available, 800 Type 1 and 500 Type 6. Both license types sold out by the close of the season.

In 2012 the fawn to doe ratio was down to 47, which is the lowest this herd has experienced in the last 15 years. Hunter success in this herd unit has averaged 90% over the last 5 years. However, 2012 had an overall success rate of 82%, similar to the 83% that was experienced in 2011. Despite this, hunter satisfaction has remained fairly high, with 80% of all respondents indicating that they were satisfied or very satisfied.

During 2012 classifications, we were unable to meet the objective of 1,980 animals, classifying only 1,018.

Population

Modeling this herd has been problematic due to widely fluctuating buck ratios and harvest estimates from 1993 to 1995 that appear to be over-inflated. Furthermore, the 2011 line transect survey results are thought to be inaccurate due to the animals being dispersed in larger clumps than normal after the difficult winter. The estimate was exceptionally low and was disregarded. To account for the questionable harvest estimates that were reported in 1993-1995 the model was abbreviated and now begins in 1996. The model aligns well above the confidence intervals of line transect estimates for 1997, 1998, 2000 and 2003, which leads to questions of accuracy. The "Time-Specific Juvenile & Constant Adult Survival" (TSJ-CA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model comes closest to a realistic post-season population estimate, the trends that are demonstrated within this model are not necessarily rational as to what is seen on the ground. The TSJ-CA did not have the lowest AIC value; however it was felt that it was the best representation of what was occurring (AIC 263). Confidence in the model is low (poor model). There is the possibility that this herd unit has some immigration and emigration on the eastern boundary, which could be the cause for widely fluctuating buck ratios and the potential inaccuracy of this model.

The 2012 post-season population estimate was around 10,000. At this point, the model seems to have some potential issues; however, the current population estimate seems reasonable. From 2008-2011, the herd was thought to be somewhere around the objective. During the winter of 2010-2011, numbers decreased and this trend continued on into 2012.

Management Summary

The traditional season in this hunt area has been the entire month of October. This season time and length seems to be adequate to allow a reasonable harvest. The number of both Type 1 and Type 6 licenses were decreased by 100, to 700 and 400, respectively. Most landowners have said that the number of animals is below where they would like to see them and there are reports of landowners taking fewer hunters than they have in the past. All but one respondent in the landowner survey stated that numbers were either where they would like to see them or below. Additionally, 2011 and 2012 saw a decrease in harvest success from a preceding 5 year average of 98%.

If we attain the estimated harvest of 810 and near normal fawn recruitment, it is projected that the population will increase slightly.

INPUT	
Species:	Pronghorn
Biologist:	Erika Peckham
Herd Unit & No.:	PR316-Highlight
Model date:	02/07/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	259	268	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	178	187	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	159	263	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)				Predicted Posthunt Population (year *i*)				Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	Total Males	Females	Total Adults	Field Est	Field SE		
1996	5922	3414	7182	**16519**	5807	2255	6418	**14480**	2652	6018	**8670**				11000
1997	3565	2599	5897	**12062**	3539	1440	5503	**10481**	2484	5858	**8342**	4305	953		11000
1998	3916	2435	5741	**12091**	3911	1327	5690	**10929**	2580	6258	**8838**	5196	1207		11000
1999	4569	2528	6133	**13230**	4556	1449	6069	**12074**	2978	6849	**9827**				11000
2000	5204	2919	6712	**14834**	5175	1759	6516	**13450**	3487	7453	**10940**				11000
2001	5421	3417	7304	**16141**	5385	2293	7069	**14748**	4011	7975	**11986**	5831	988		11000
2002	5291	3931	7816	**17037**	5270	2648	7402	**15320**	4201	8143	**12343**				11000
2003	6013	4117	7980	**18109**	5982	2735	7649	**16366**	4573	8682	**13254**	10806	1651		11000
2004	7649	4481	8508	**20639**	7612	3146	7999	**18756**	5654	9664	**15318**				11000
2005	8926	5541	9471	**23938**	8834	4186	8874	**21894**	7026	10890	**17916**				11000
2006	7780	6885	10673	**25338**	7743	5349	9831	**22923**	7400	11087	**18487**				11000
2007	6553	7252	10865	**24670**	6496	5655	9908	**22059**	7052	10547	**17599**				11000
2008	5866	6911	10336	**23113**	5795	5105	9298	**20198**	6050	9526	**15576**				11000
2009	5999	5929	9336	**21263**	5879	4204	8330	**18413**	5595	9008	**14604**				11000
2010	5589	5483	8828	**19900**	5523	3996	7766	**17284**	4469	7532	**12001**				11000
2011	4433	4379	7382	**16194**	4270	3167	6304	**13741**	3028	5526	**8554**				11000
2012	2532	2968	5415	**10915**	2523	2398	5036	**9957**	2911	5029	**7940**				11000
2013	3130	2852	4929	**10911**	3119	2302	4599	**10020**							11000
2014															
2015															
2016															
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2024															
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2026															
2027															
2028															

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1996	0.40			0.77		
1997	0.90			0.77		
1998	0.90			0.77		
1999	0.90			0.77		
2000	0.90			0.77		
2001	0.90			0.77		
2002	0.90			0.77		
2003	0.90			0.77		
2004	0.90			0.77		
2005	0.90			0.77		
2006	0.90			0.77		
2007	0.90			0.77		
2008	0.83			0.77		
2009	0.90			0.77		
2010	0.60			0.77		
2011	0.40			0.77		
2012	0.90			0.77		
2013	0.90			0.77		
2014	0.40					
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						
2026						
2027						
2028						

Parameters:	Optim cells
Adult Survival =	0.771
Initial Total Male Pop/10,000 =	0.341
Initial Female Pop/10,000 =	0.718

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1996		82.45	4.36	47.54	48.86	3.03	1054	695	104	1853	34.0	10.6
1997		60.46	4.29	44.07	42.59	3.40	1054	359	24	1437	44.6	6.7
1998		68.21	4.07	42.41	33.09	2.52	1007	46	4	1057	45.5	0.9
1999		74.49	4.34	41.22	56.09	3.56	981	58	12	1051	42.7	1.0
2000		77.53	4.25	43.48	58.74	3.50	1054	178	26	1258	39.7	2.9
2001		74.22	4.20	46.78	49.80	3.19	1022	213	32	1267	32.9	3.2
2002		67.70	3.91	50.29	51.82	3.25	1166	376	19	1561	32.6	5.3
2003		75.35	4.09	51.59	63.84	3.64	1256	301	28	1585	33.6	4.1
2004		89.90	4.89	52.67	62.55	3.78	1214	463	34	1711	29.8	6.0
2005		94.25	5.13	58.51	63.36	3.86	1232	542	84	1858	24.5	6.3
2006		72.89	3.40	64.52	67.77	3.23	1397	765	33	2195	22.3	7.9
2007		60.31	3.05	66.74	62.43	3.13	1452	870	52	2374	22.0	8.8
2008		56.75	2.95	66.87	74.07	3.55	1642	944	64	2650	26.1	10.0
2009		64.25	3.05	63.51	56.84	2.81	1568	914	109	2591	29.1	10.8
2010		63.30	3.25	62.11	71.15	3.52	1352	966	60	2378	27.1	12.0
2011		60.06	3.76	59.33	61.23	3.81	1102	980	148	2230	27.7	14.6
2012		46.76	3.67	54.80	53.24	4.00	518	345	8	871	19.2	7.0
2013		63.50	3.58	57.87	68.68	3.78	500	300	10	810	19.3	6.7
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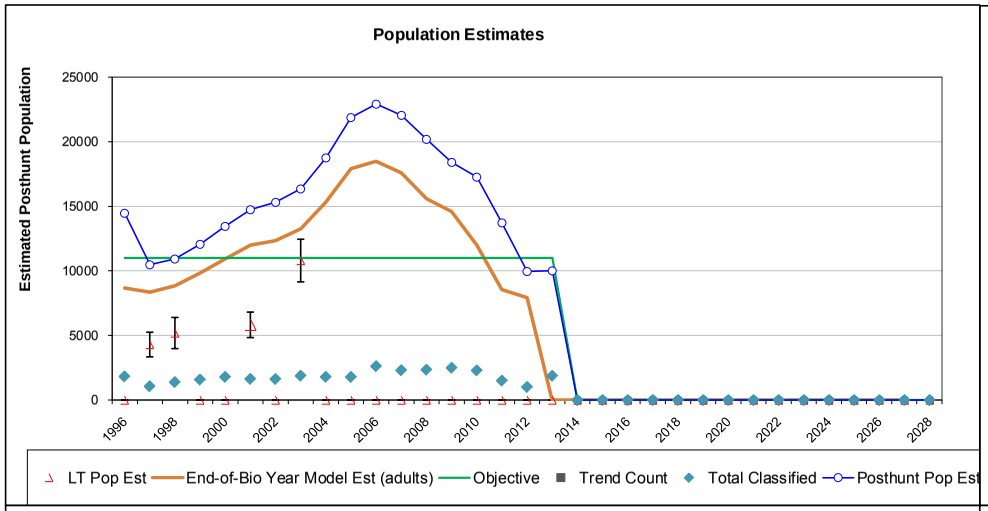
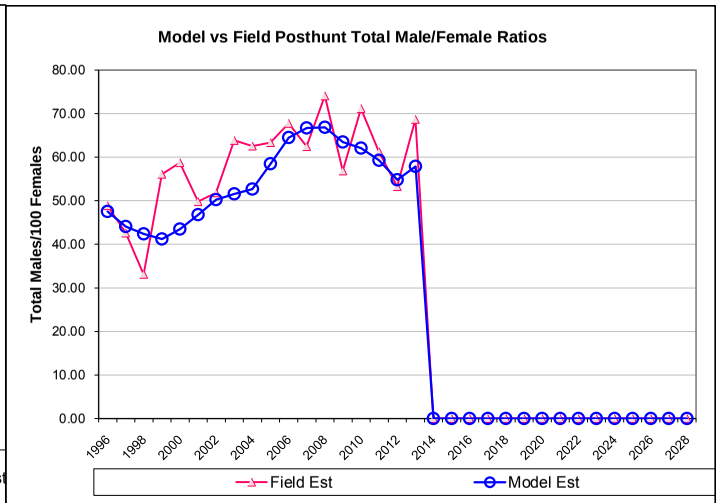
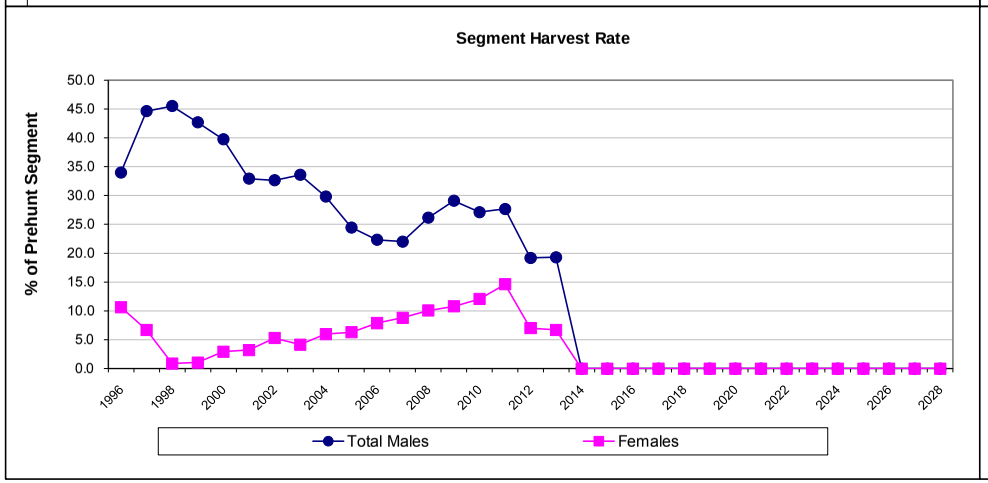
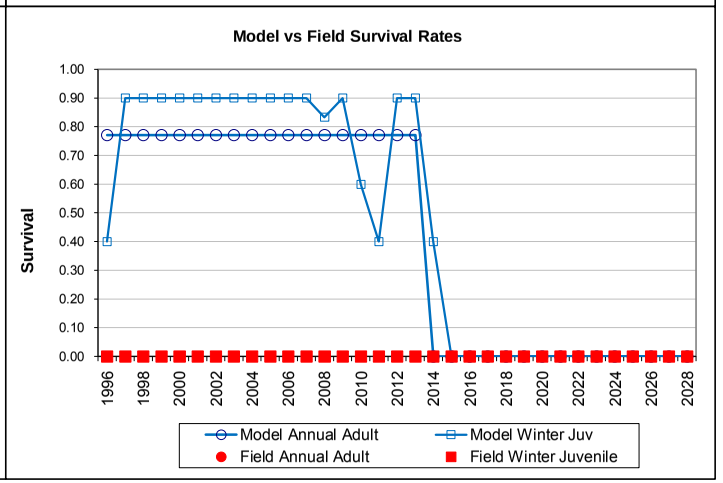
FIGURES









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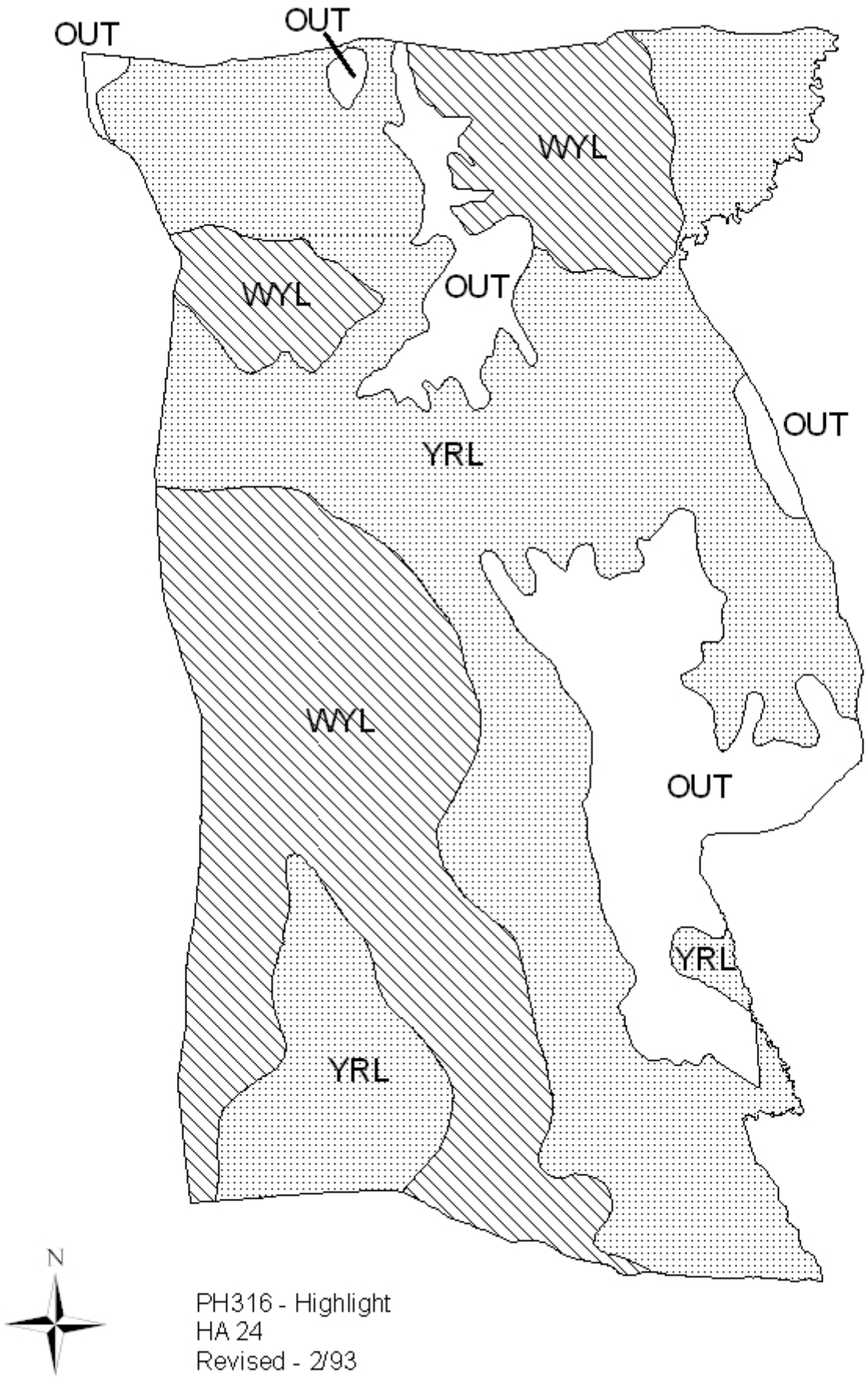


PH316 - Highlight
HA 24
Revised - 2/93

2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR318 - CRAZY WOMAN

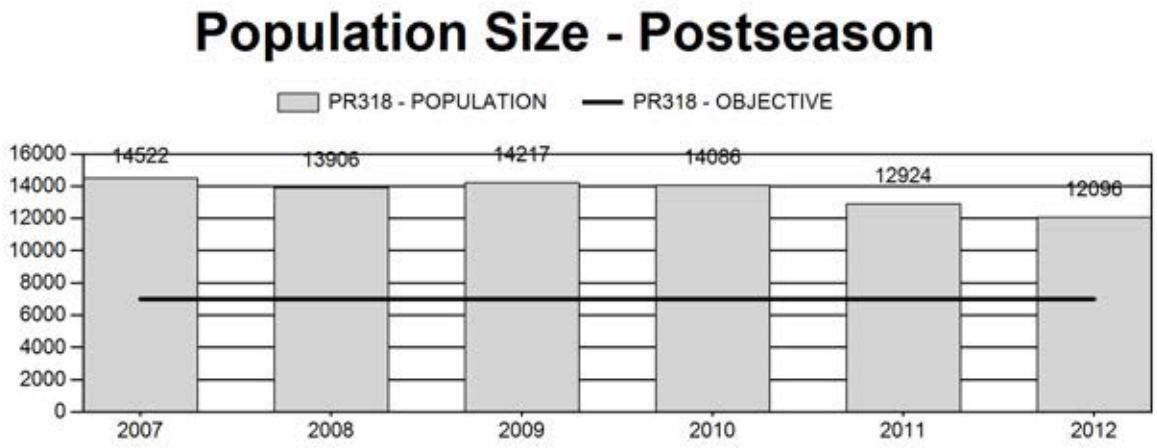
HUNT AREAS: 22, 113
PREPARED BY: DAN THIELE

	2007 - 2011 Average	2012	2013 Proposed
Population:	13,931	12,096	10,790
Harvest:	1,570	1,987	2,100
Hunters:	1,494	1,968	2,000
Hunter Success:	105%	101%	105%
Active Licenses:	1,693	2,214	2,400
Active License Percent:	93%	90%	88%
Recreation Days:	4,899	7,517	7,800
Days Per Animal:	3.1	3.8	3.7
Males per 100 Females	63	60	
Juveniles per 100 Females	75	82	

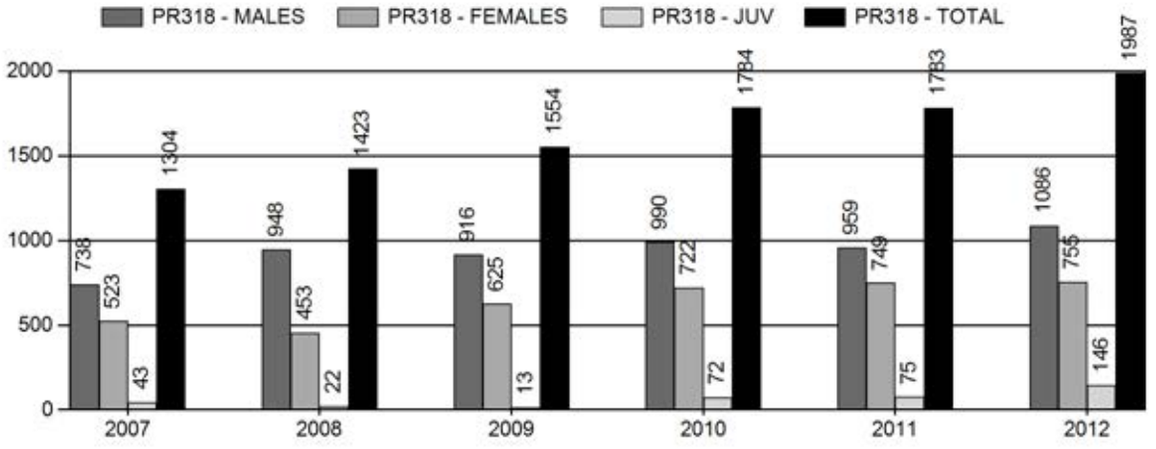
Population Objective:	7,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	73%
Number of years population has been + or - objective in recent trend:	10
Model Date:	5/23/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

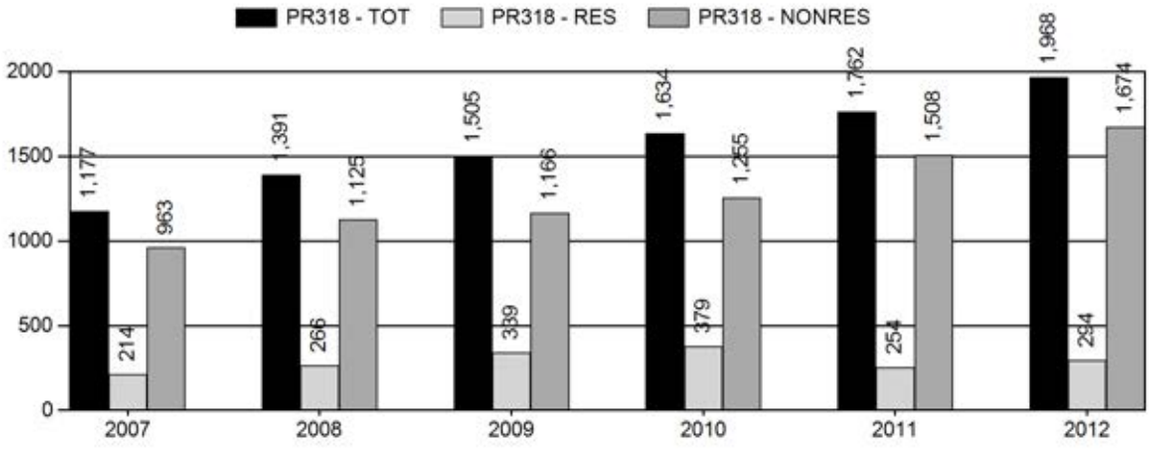
	JCR Year	Proposed
Females ≥ 1 year old:	14%	18%
Males ≥ 1 year old:	22%	36%
Juveniles (< 1 year old):	2%	0%
Total:	12%	16%
Proposed change in post-season population:	-6%	-11%



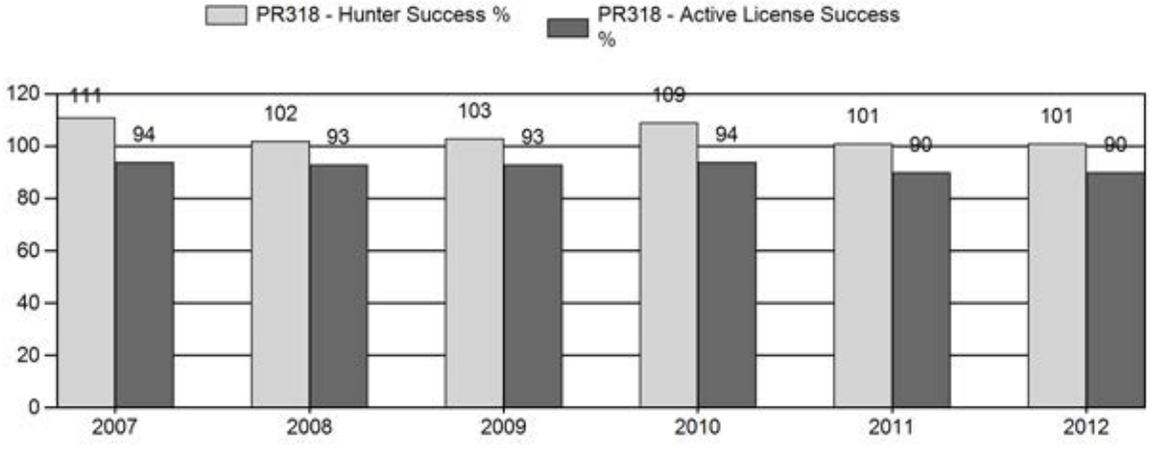
Harvest



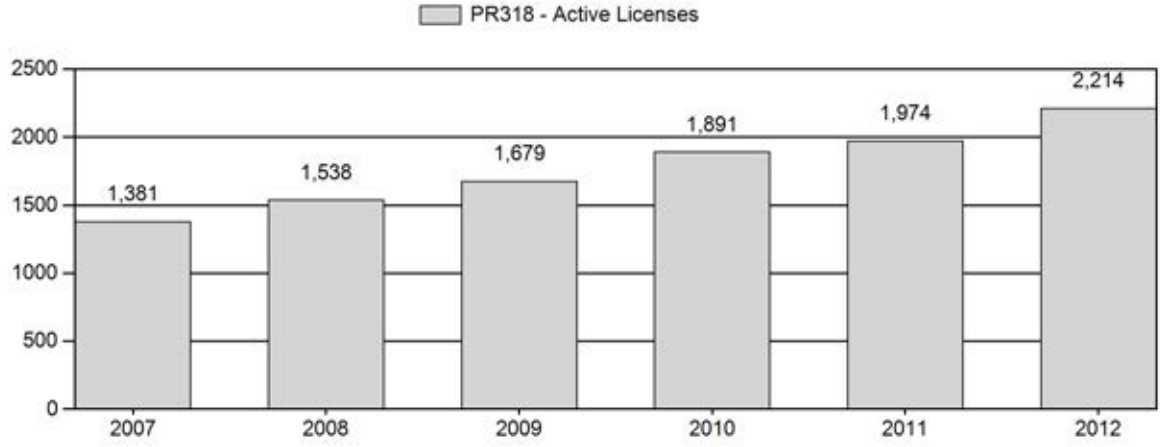
Number of Hunters



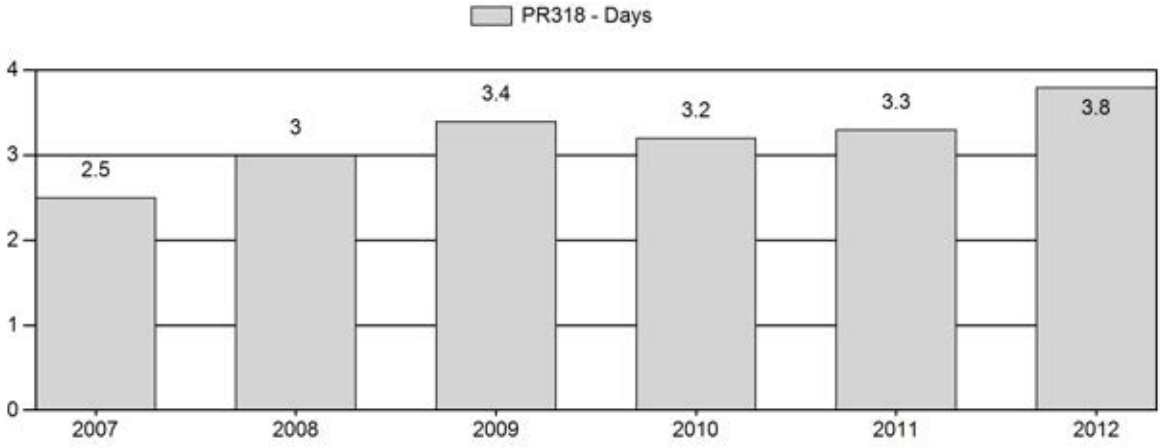
Harvest Success



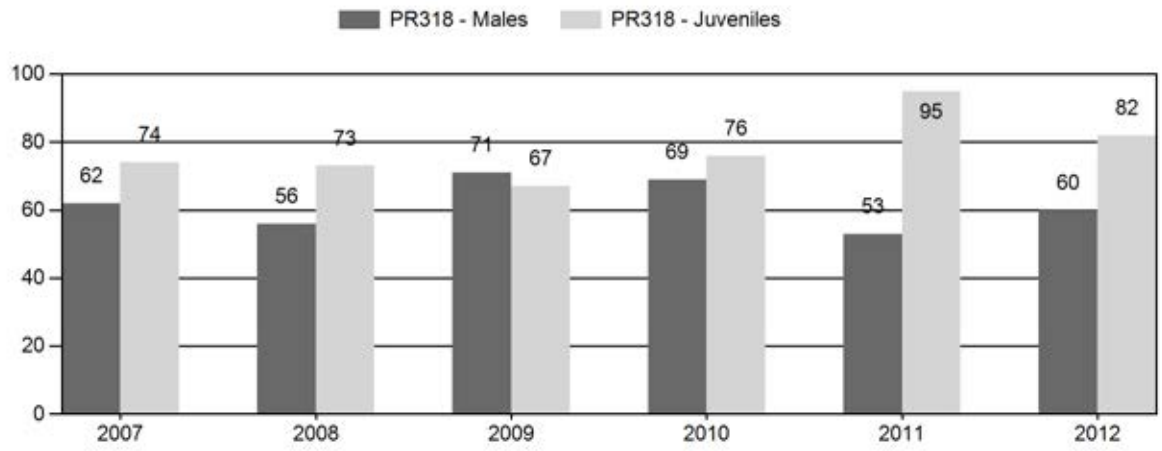
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR318 - CRAZY WOMAN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	15,957	294	736	1,030	26%	1,664	42%	1,237	31%	3,931	1,789	18	44	62	± 4	74	± 4	46
2008	15,471	235	723	958	24%	1,717	44%	1,256	32%	3,931	2,569	14	42	56	± 3	73	± 4	47
2009	15,927	355	1,031	1,386	30%	1,945	42%	1,303	28%	4,634	2,537	18	53	71	± 3	67	± 3	39
2010	16,049	153	808	961	28%	1,392	41%	1,054	31%	3,407	2,727	11	58	69	± 4	76	± 5	45
2011	14,885	100	395	495	21%	936	40%	888	38%	2,319	3,889	11	42	53	± 4	95	± 7	62
2012	14,282	172	371	543	25%	911	41%	743	34%	2,197	3,069	19	41	60	± 5	82	± 6	51

2013 HUNTING SEASONS
CRAZY WOMAN PRONGHORN HERD (PR318)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
22	1	Oct. 1	Oct. 31	1,000	Limited quota licenses; any antelope
	6	Sep. 1	Sep. 30	900	Limited quota licenses; doe or fawn valid on private land in that portion of Area 22 north of Crazy Woman Creek
		Oct. 1	Oct. 31		Unused Area 22 Type 6 licenses valid in the entire area
113	1	Oct. 1	Oct. 31	200	Limited quota licenses; any antelope
	2	Óct. 11	Oct. 31	200	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	350	Limited quota licenses; doe or fawn
Archery		Aug. 15	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
22		No change
113		No change
Herd Unit Total		**No change**

Management Evaluation
Current Postseason Population Management Objective: 7,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~12,100
2013 Proposed Postseason Population Estimate: ~10,800

Herd Unit Issues

The Crazy Woman Pronghorn Herd Unit post-season population objective is 7,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1988 but will be reviewed this year.

Area 22 is largely private land with limited public land hunting opportunities. Therefore, access to hunt is largely determined by landowners. Increased outfitter leasing of ranches typically results in more restrictive access. Area 113 contains a large amount of inaccessible public land. A cooperative agreement between private landowners, the BLM and the WGFD ended in 2008 when one of the remaining two landowners withdrew from the program. In 2012, the Mieke Ranch sold most of its property which is expected to significantly reduce hunter access. Even with the expansive outfitting industry, at the herd unit level increasing numbers of hunters are finding hunting opportunity. This past hunting season both buck harvest and total harvest rivaled highs set in 1982, 1,143 and 2,048, respectively.

Weather

Weather in the area of the Crazy Woman Herd Unit during 2012 turned extremely warm and dry after several good moisture years. The Palmer drought index for Climate Division 5 (Powder, Little Missouri and Tongue drainages) showed "very moist" conditions for January 2012 but progressed to "extreme drought" by January 2013. The National Weather Service in Sheridan reported 2012 as the driest year since 1960 and the 4th driest year in 105 years with 9.53 inches of precipitation (14.16" ave). It was also the 6th warmest year on record with an average temperature of 48.1° F, the warmest year since 2006. With the late onset of drought in 2012, fawn recruitment was not significantly affected.

Habitat

There is one Wyoming big sagebrush transect in this herd unit. Utilization during the 2011-12 winter was very light (less than 5% of leaders browsed) as pronghorn were dispersed over winter/yearlong range. Production measured in September 2012 averaged 12 mm per leader compared to 30 mm per leader in 2011. Winter conditions have been mild so above average mortality was not observed.

Field Data

Classifications for 2012 yielded a fawn ratio of 82:100 and a buck ratio of 60:100. Fawn production the past two years exceeded the five year average suggesting adequate production for population growth. Buck ratios in this herd typically exceed the 60:100 threshold designated for trophy management although high buck ratios are not managed for. Buck ratios exceeded 60:100 in four of the past six years. The annual postseason landowner survey was conducted following the hunting season with responses showing that 76% of landowners at the herd unit scale are satisfied with current pronghorn numbers. The five year trend shows a strong indication that this population is decreasing. The last line transect was flown in 2010 with a resulting end of year population estimate of 13,163 pronghorn, the highest estimate to date. Hunter satisfaction was high with Areas 22 and 113 hunters reporting 90% and 88% positive responses, respectively.

Harvest Data

The 2012 harvest survey reported near record harvest for buck, doe/fawn and total pronghorn which continued an upward trend for the six year period. Hunter numbers were 67% above the 2007 total. Although active license success was very high (90%), the 2011 and 2012 success rates were the lowest of the six year reporting period. Likewise, hunter effort continued an increasing trend reaching a six year high of 3.8 days per animal harvested. Ninety-two percent of Area 22 Type 1 licenses sold while 91% of Type 6 licenses sold. In Area 113, all but 2 Type 1 and 2 licenses sold and 89% of Type 6 licenses sold.

Population

This population is estimated at 12,100 pronghorn, well above the population objective. The population estimate was generated with the newly adopted EXCEL spreadsheet model. The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) model was chosen as it produced the lowest AIC value (56) and results consistent with harvest and landowner survey trends. The model attempts to track three line transect surveys over the last 10 years. The 2010 line transect estimate is the highest to date and the model does not track though the confidence interval. The

model indicates this population has decreased about 30% from its 2005 high of nearly 17,000 and about 15% since 2009. Widely fluctuating buck ratios due to inadequate classification samples and conversion from aerial to ground surveys likely complicate modeling efforts.

Management Summary

The population model is considered a fair model as the population trend and estimate appear reasonable. Harvest data, landowner surveys and WGFD field observations confirm the trend represented in the model. No hunting season changes were made for 2013 although more conservative seasons will be warranted if the population continues to decrease. If projected harvest is achieved a postseason population of 10,800 pronghorn is expected.

INPUT	
Species:	Pronghorn
Biologist:	Dan Thiele
Herd Unit & No.:	Crazy woman (318)
Model date:	05/23/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	81	90	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	47	56	☑ SCJ,SCA	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	49	148	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	3676	3574	6265	**13515**	3610	2619	5593	**11822**	3571	6177	**9748**				7000
1994	4520	3500	6054	**14073**	4375	2571	5176	**12122**	2916	5167	**8083**				7000
1995	4197	2857	5064	**12118**	4035	2016	4404	**10454**	2376	4462	**6839**				7000
1996	3919	2329	4373	**10622**	3862	1644	4015	**9520**	2078	4172	**6249**				7000
1997	3049	2036	4088	**9174**	3049	1585	4057	**8691**	2538	4734	**7272**				7000
1998	4218	2487	4639	**11344**	4209	2020	4626	**10855**	2841	5158	**7999**				7000
1999	4795	2784	5055	**12634**	4781	2283	5030	**12093**	2858	5300	**8158**				7000
2000	3861	2801	5194	**11856**	3861	2313	5175	**11349**	2702	5243	**7945**				7000
2001	3451	2648	5138	**11238**	3451	2151	5072	**10674**	2543	5127	**7670**				7000
2002	3683	2492	5025	**11199**	3669	2005	4946	**10620**	3146	5744	**8890**				7000
2003	5390	3084	5629	**14102**	5374	2490	5539	**13403**	3512	6218	**9730**	8526	1218		7000
2004	5444	3441	6094	**14979**	5424	2836	5959	**14219**	4307	7071	**11378**				7000
2005	6613	4221	6929	**17763**	6576	3579	6735	**16891**	4312	7101	**11414**	11472	3734		7000
2006	6006	4226	6959	**17191**	5994	3547	6547	**16088**	4266	6892	**11159**				7000
2007	5021	4181	6755	**15957**	4974	3369	6179	**14522**	4221	6680	**10901**				7000
2008	4788	4137	6546	**15471**	4764	3094	6048	**13906**	4442	7072	**11514**				7000
2009	4643	4353	6931	**15927**	4629	3345	6243	**14217**	4316	6863	**11179**				7000
2010	5093	4230	6726	**16049**	5014	3141	5932	**14086**	3531	5982	**9513**	13163	2872		7000
2011	5562	3460	5863	**14885**	5479	2406	5039	**12924**	3602	6043	**9645**				7000
2012	4830	3530	5922	**14282**	4669	2335	5091	**12096**	3407	5692	**9099**				7000
2013	4184	3339	5578	**13100**	4074	2129	4588	**10790**							7000
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.80			0.84		
1994	0.40			0.84		
1995	0.40			0.84		
1996	0.40			0.84		
1997	0.80			0.84		
1998	0.55			0.84		
1999	0.40			0.84		
2000	0.40			0.84		
2001	0.44			0.84		
2002	0.80			0.84		
2003	0.53			0.84		
2004	0.71			0.84		
2005	0.40			0.84		
2006	0.43			0.84		
2007	0.57			0.84		
2008	0.80			0.84		
2009	0.68			0.84		
2010	0.40			0.84		
2011	0.65			0.84		
2012	0.65			0.84		
2013	0.65			0.84		
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Parameters:	Optim cells
Juvenile Survival =	0.650
Adult Survival =	0.844
Initial Total Male Pop/10,000 =	0.357
Initial Female Pop/10,000 =	0.626

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		58.67	2.89	57.05	53.82	2.73	868	611	60	1539	26.7	10.7
1994		74.66	3.69	57.81	63.30	3.28	844	798	132	1774	26.5	14.5
1995		82.87	4.28	56.42	57.18	3.29	765	600	147	1512	29.5	13.0
1996		89.62	4.40	53.25	52.45	3.02	623	326	52	1001	29.4	8.2
1997		74.58	3.80	49.80	49.17	2.85	410	29	0	439	22.2	0.8
1998		90.92	4.38	53.62	54.04	3.04	425	12	8	445	18.8	0.3
1999		94.85	5.14	55.08	57.80	3.61	456	23	12	491	18.0	0.5
2000		74.33	3.58	53.93	53.82	2.86	444	17	0	461	17.4	0.4
2001		67.17	3.35	51.54	50.20	2.74	452	60	0	512	18.8	1.3
2002		73.29	3.11	49.59	48.02	2.33	442	72	12	526	19.5	1.6
2003		95.75	4.16	54.78	57.43	2.89	540	82	14	636	19.3	1.6
2004		89.33	3.29	56.47	57.83	2.41	550	123	18	691	17.6	2.2
2005		95.43	3.35	60.91	65.48	2.55	583	177	33	793	15.2	2.8
2006		86.30	3.36	60.72	56.50	2.49	617	375	11	1003	16.1	5.9
2007		74.34	2.79	61.90	61.90	2.45	738	523	43	1304	19.4	8.5
2008		73.15	2.72	63.20	55.79	2.25	948	453	22	1423	25.2	7.6
2009		66.99	2.40	62.80	71.26	2.50	916	625	13	1554	23.1	9.9
2010		75.72	3.09	62.88	69.04	2.90	990	722	72	1784	25.7	11.8
2011		94.87	4.44	59.03	52.88	2.94	959	749	75	1783	30.5	14.1
2012		81.56	4.03	59.61	59.60	3.23	1086	755	146	1987	33.8	14.0
2013		75.00	3.06	59.86	60.71	2.64	1100	900	100	2100	36.2	17.7
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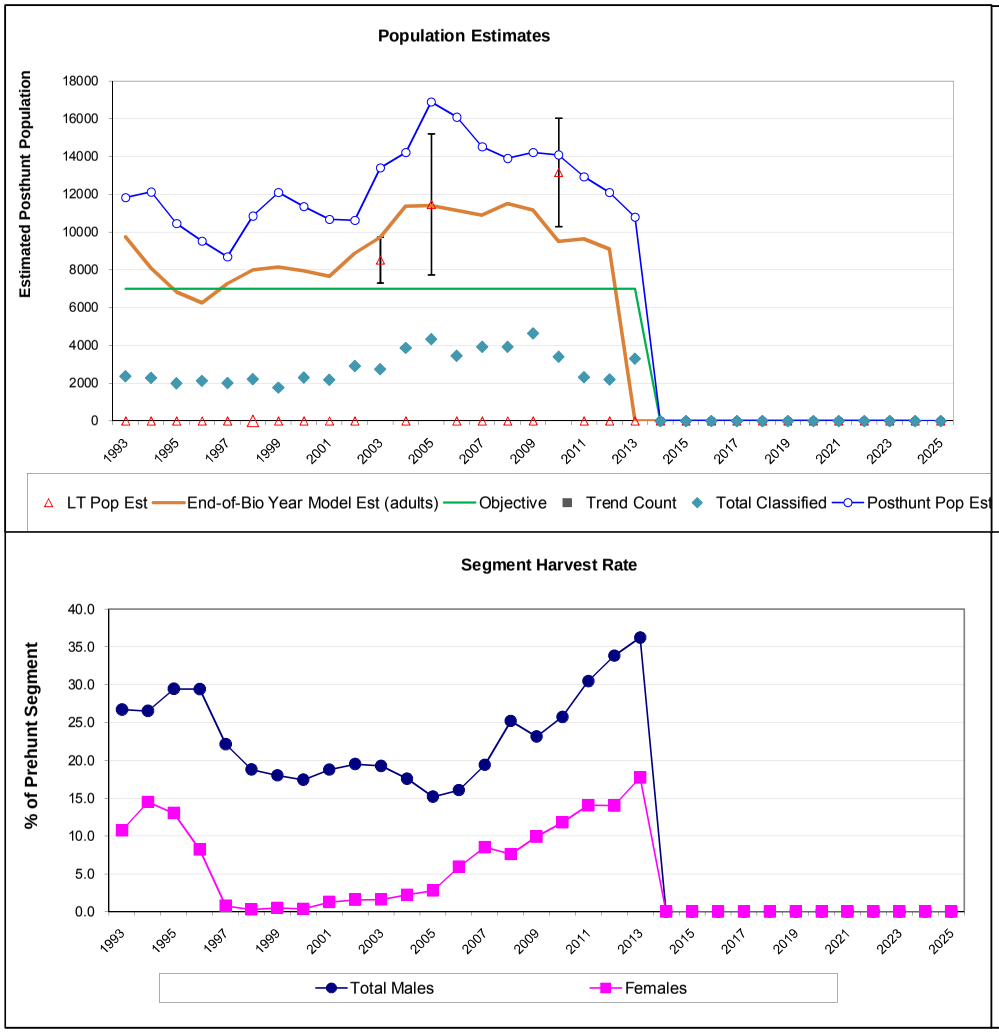
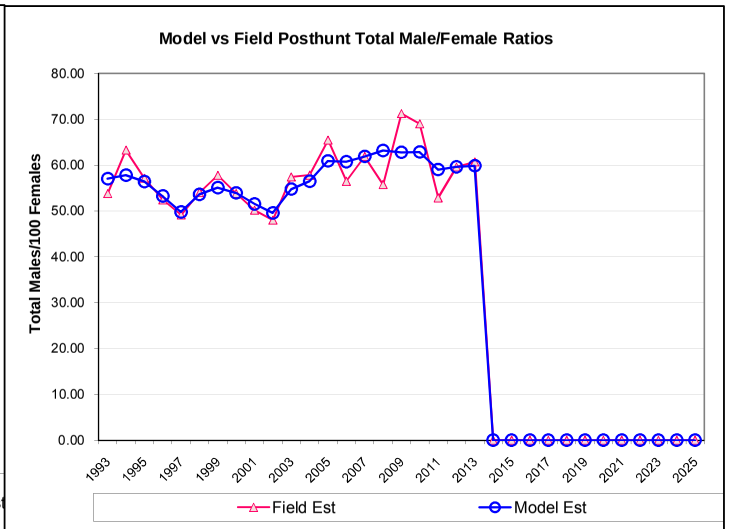
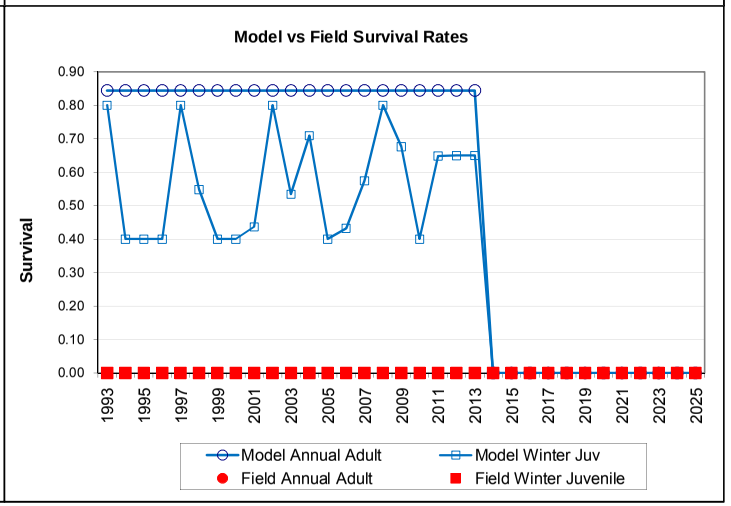
FIGURES







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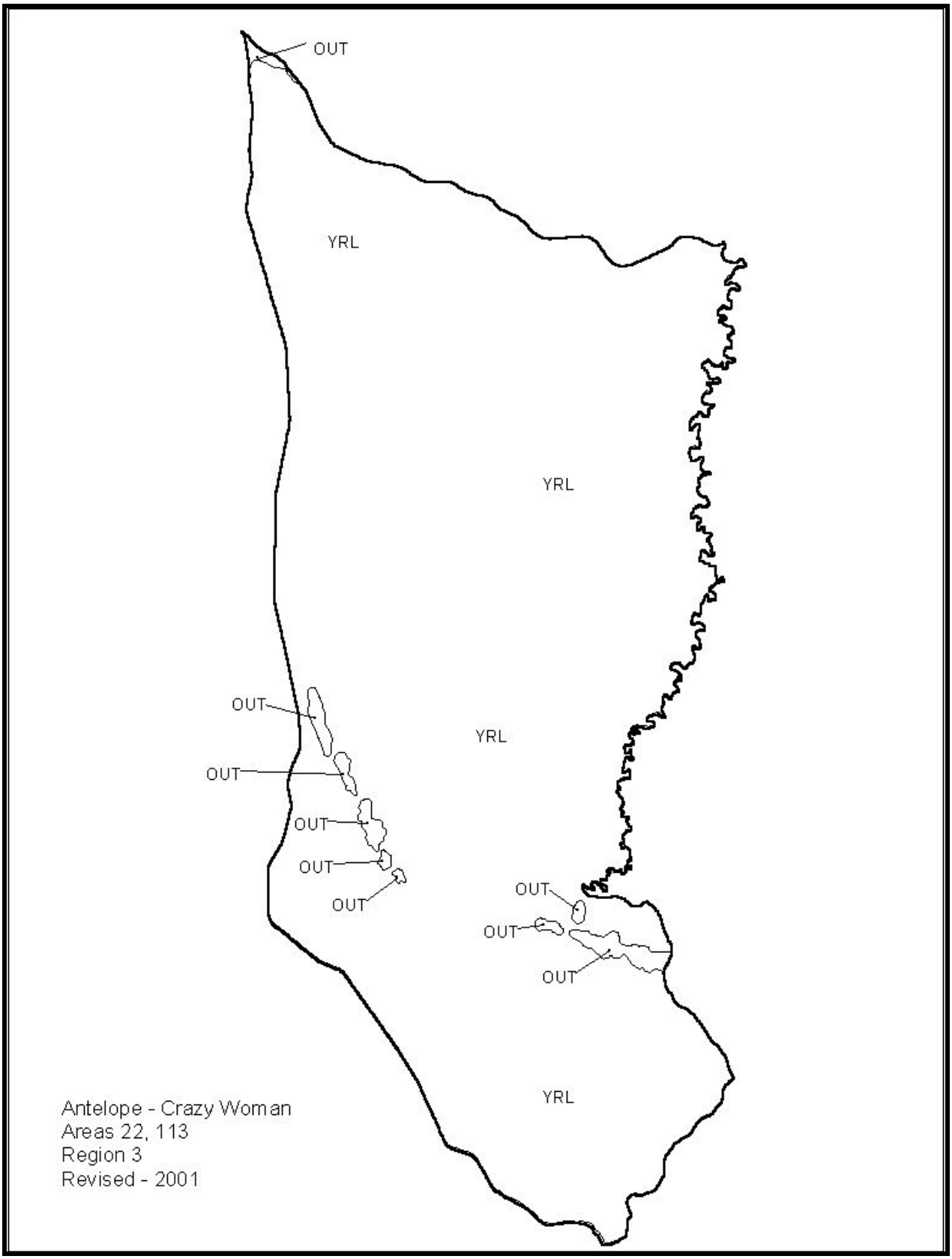
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Antelope - Crazy Woman
Areas 22, 113
Region 3
Revised - 2001

2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR339 - NORTH BLACK HILLS

HUNT AREAS: 1-3, 18-19

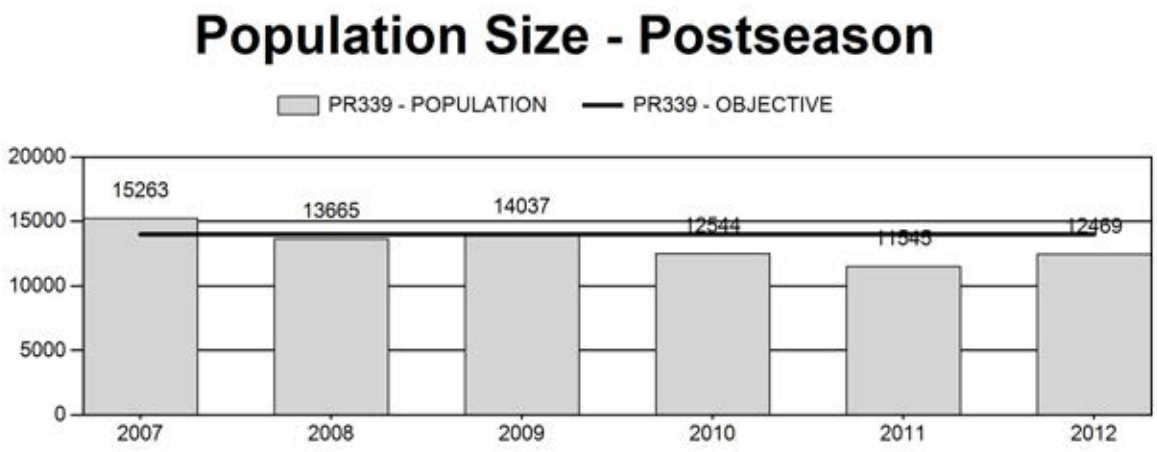
PREPARED BY: ERIKA PECKHAM

	2007 - 2011 Average	2012	2013 Proposed
Population:	13,411	12,469	8,433
Harvest:	1,535	595	758
Hunters:	1,668	657	850
Hunter Success:	92%	91%	89%
Active Licenses:	1,879	767	950
Active License Percent:	82%	78%	80%
Recreation Days:	6,082	2,791	3,300
Days Per Animal:	4.0	4.7	4.4
Males per 100 Females	47	35	
Juveniles per 100 Females	63	82	

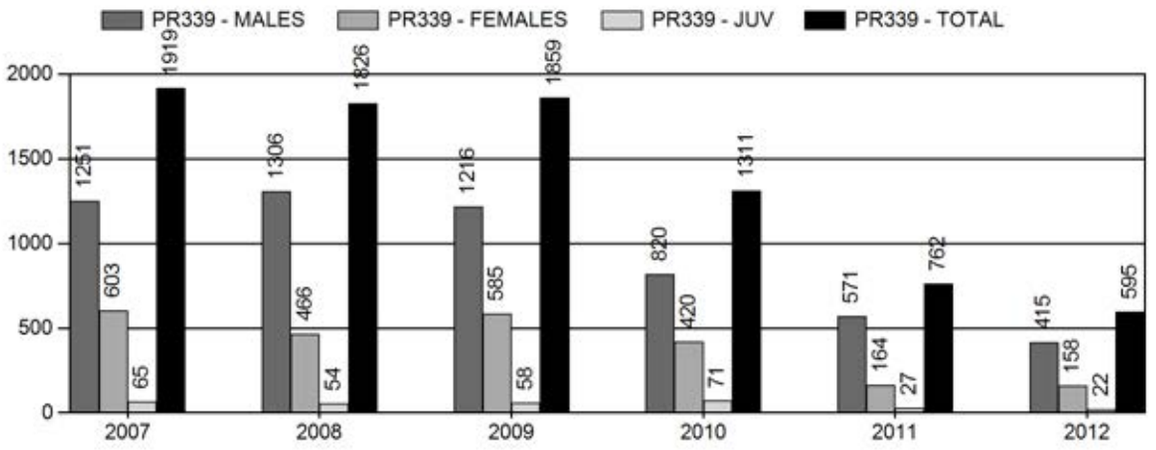
Population Objective:	14,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10.9%
Number of years population has been + or - objective in recent trend:	3
Model Date:	02/20/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

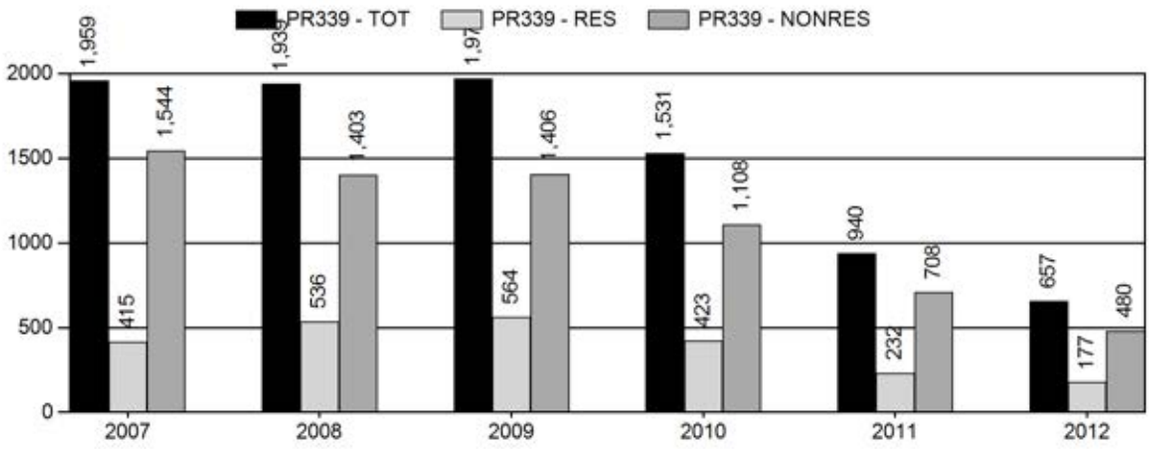
	JCR Year	Proposed
Females ≥ 1 year old:	2.4%	5.4%
Males ≥ 1 year old:	15.0%	39.5%
Juveniles (< 1 year old):	.5%	0%
Total:	4.6%	8.1%
Proposed change in post-season population:	8.3%	-32%



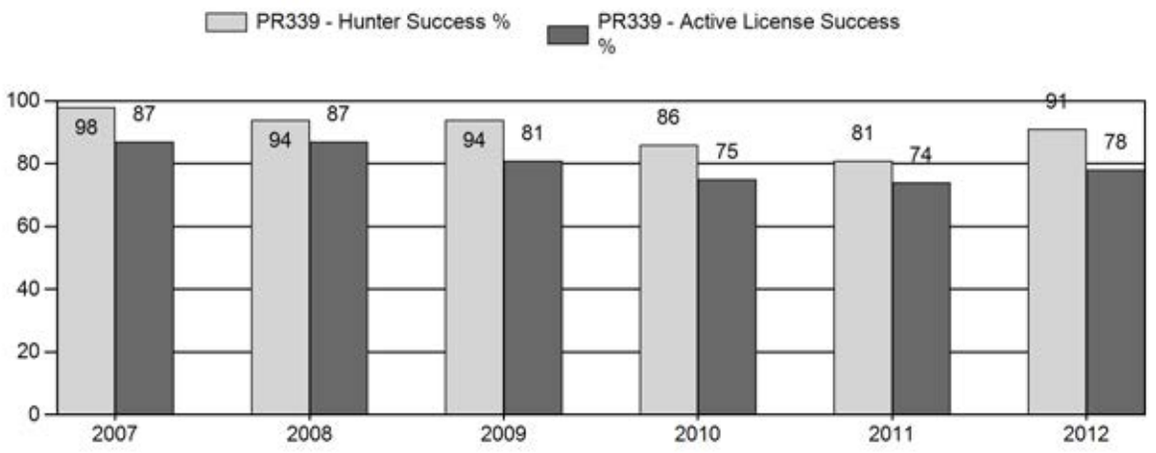
Harvest



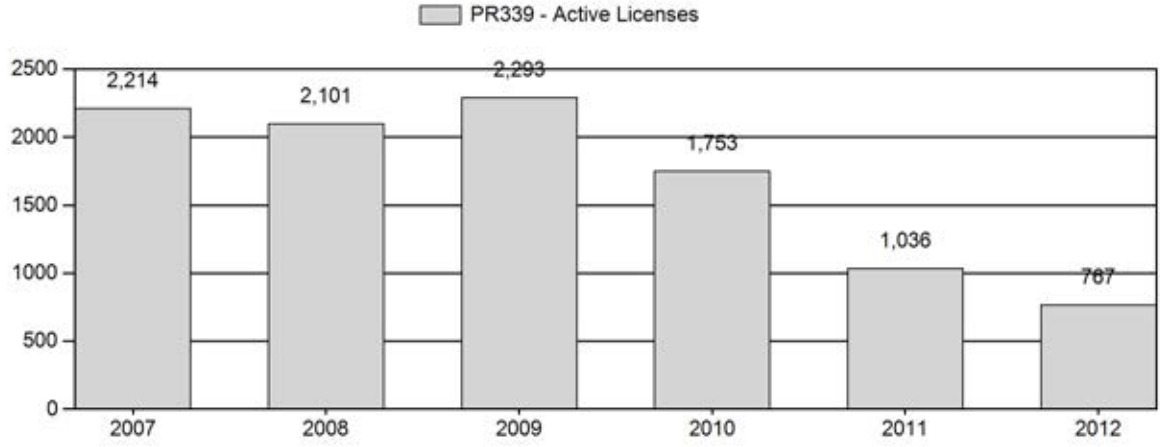
Number of Hunters



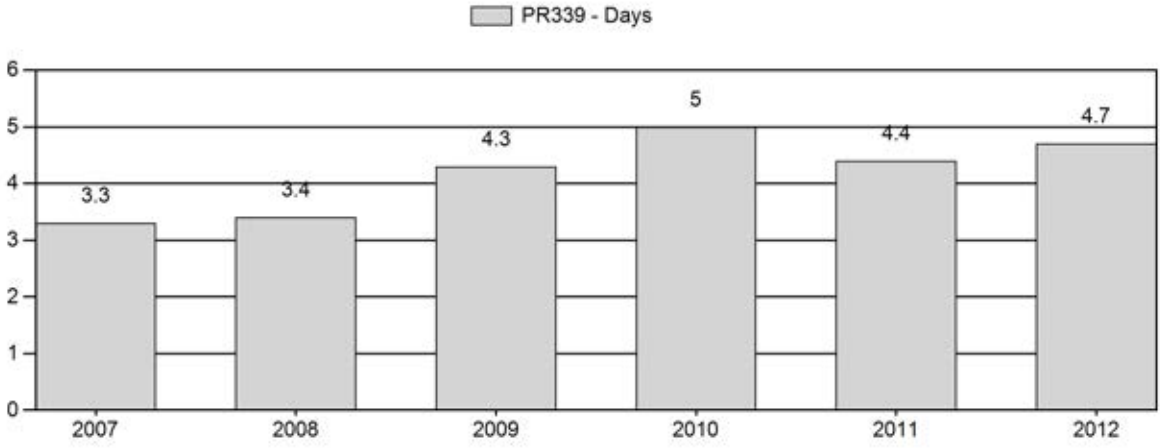
Harvest Success



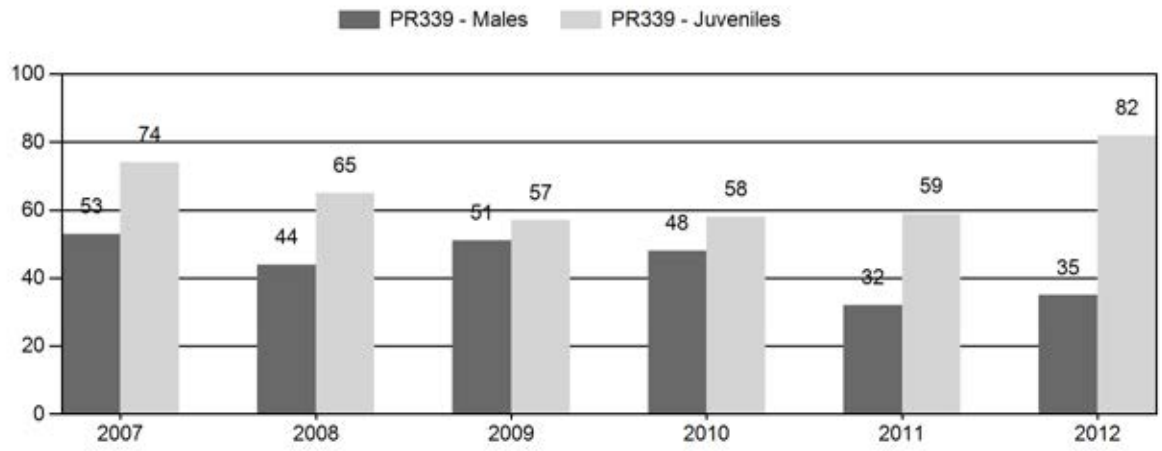
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR339 - NORTH BLACK HILLS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	17,374	210	344	554	23%	1,046	44%	771	33%	2,371	2,130	20	33	53	± 4	74	± 5	48
2008	15,674	177	275	452	21%	1,032	48%	673	31%	2,157	2,828	17	27	44	± 4	65	± 5	45
2009	16,082	160	423	583	25%	1,137	48%	649	27%	2,369	2,732	14	37	51	± 4	57	± 4	38
2010	13,986	103	320	423	23%	874	48%	511	28%	1,808	1,761	12	37	48	± 4	58	± 5	39
2011	12,384	51	137	188	17%	595	52%	353	31%	1,136	1,662	9	23	32	± 4	59	± 6	45
2012	13,123	31	148	179	16%	513	46%	419	38%	1,111	1,666	6	29	35	± 5	82	± 8	61

2013 HUNTING SEASONS
NORTH BLACK HILLS PRONGHORN HERD (PR339)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
1	1	Oct. 1	Nov. 20	200	Limited quota licenses; any antelope
	6	Oct. 1	Nov. 20	100	Limited quota licenses; doe or fawn
2	1	Oct. 1	Nov. 20	100	Limited quota licenses; any antelope
	6	Oct. 1	Nov. 20	25	Limited quota licenses; doe or fawn
3	1	Oct. 1	Nov. 20	100	Limited quota licenses; any antelope
	6	Oct. 1	Nov. 20	25	Limited quota licenses; doe or fawn
18	1	Oct. 1	Oct. 20	150	Limited quota licenses; any antelope
18, 19	6	Oct. 1	Oct. 20	150	Limited quota licenses; doe or fawn valid on private land
19	1	Oct. 1	Oct. 20	250	Limited quota licenses; any antelope
Archery		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
1	1	+75
	6	+75
3	1	+50
Herd Unit Total	**1**	**+125**
	6	**+75**

Management Evaluation

Current Postseason Population Management Objective: 14,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~12,500
2013 Proposed Postseason Population Estimate: ~8,400

Herd Unit Issues

The management objective for the North Black Hills Herd Unit is a post-season population objective of 14,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1994.

The 2012 post-season population estimate was about 12,500. Since 2006, this population has been declining. Currently, the population is estimated to be below the management objective. Issues related to adverse winter and spring weather, and low fawn production have been observed in this herd over the past few seasons. The winters of 2008 to 2010 appeared to have taken a toll on this herd in the form of increased winter mortality and decreased fawn recruitment. Heavy spring snows and cold spring temperatures in 2009 & 2010 likely reduced fawn survival, particularly in Areas 18 and 19. Pronghorn in Areas 18 and 19 are still not rebounding yet and numbers do not warrant issuing more licenses. The last line transect survey was conducted in this herd unit was in June 2012.

Weather

Weather conditions throughout 2012 and into 2013 were extremely dry and warmer than normal. The winters of 2011-2012 and 2012-13 were mild and did not see much for snow accumulation. During the majority of these 2 winters, the ground was open, with minimal snowpack. As a result over winter survival was high. Although the spring and summer of 2012 were drier than normal, it appears that the fawn to doe ratio did not suffer.

Habitat

The Stewart Creek habitat transect is located within this herd unit. The utilization is typically very light on this transect. In the fall of 2012, the transect survey showed the average leader growth to be 30mm, which is higher than anticipated, given the drought conditions that were experienced in the 2012 growing season.

Field Data

2012 saw a notable increase in the fawn to doe ratios at 82, up from the preceding five year average of 63. This is the highest fawn to doe ratio this herd has experienced since 2006. Despite the population being slightly depressed, 73% of all hunters reported being either very satisfied or satisfied.

Harvest

In 2012 there were 900 licenses available, 675 Type 1 and 225 Type 6. Both types were sold out by season close. The largest issue with achieving adequate harvest in this herd is access, as most of the pronghorn are found on private lands.

Hunter success in this herd unit averaged 82% over the last 5 years, with only slightly higher success in preceding years. 2012 had an overall success rate of 78%.

Population

We conducted line transect surveys in 1995, 1997, 1999, 2002, 2004, 2008 and 2012, which provided independent population estimates that were similar to the model estimates. The line transect estimate from the 2012 survey provided an estimate of 8,115, with a reasonable confidence interval of 1,134. Although this estimate is substantially lower than the post-season population estimate derived from the model (12,469) for 2012, it is not an unlikely estimate whatsoever. Based on observations from field personnel and comments from both landowners and hunters, it is well within the realm of possibility that this independent estimate is realistic.

The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJ-CA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC (164), they were all very close and this one appeared to most accurately represent what was occurring on the ground based on field observations, and made best use of the available information.

This model appears to track well with line transect estimates and overall seems to mirror what was seen on the ground (Fair model). Although the model predicts a population decline of around 35%, it is highly unlikely that the issuance of 200 more licenses in this herd unit will adversely affect this herd. In contrast, with the improving fawn to doe ratios and the mild winter of 2012-2013 it is makes logical sense that this herd will have the potential to perhaps start to trend back upwards.

Management Strategy

The traditional season in this hunt area has been the entire month of October and part of November in Hunt Areas 1, 2 and 3, and the entire month of October in Areas 18 and 19. This season time and length seems to be adequate to allow a reasonable harvest. The number of both Type 1 and Type 6 licenses were increased by 125 and 75, respectively. 2012 license numbers were decreased by a total of 300 as a result of the declining population at that time. With improving fawn to doe ratios and high harvest success and landowner comments, it was felt that this herd could accommodate an additional 200 licenses.

If we attain the projected harvest of 758 and near normal fawn recruitment pronghorn population growth will slow and potentially decline slightly. Based on the population model, we predict a 2013 post-season population of about 8,400, however, if better fawn production is realized, it could begin to trend upwards.

2012 PR339 - NORTH BLACK HILLS Pronghorn Line-Transect Summary

Survey Dates:	6/19/2013 - 6/27/2013
Survey Cost:	$ 4,085.00
Flight Service:	LAIRD FLYING SERVICE
Aircraft:	HUSKY-ARIAT
Observers:	Peckham

Weather Conditions:

Temperature (Degrees Fahrenheit):	65-75
Cloud Cover (%):	0-30
Wind Speed (MPH):	5 - 15

Transect Limits:	461641/4984576 to 573719/4905360
Transect Direction:	North/South
Transect Interval (Minutes of Longitude):	5000
Transect Length: (Mi.):	911
Transect Altitude (AGL):	309 ft.
Occupied Habitat (mi^2):	2,020
Density Estimate (Animals/mi^2 with Confidence Intervals):	4.0335 (3.0647 - 5.3084)
Population Estimate (with Confidence Intervals):	8,115 (6,166 - 10,681)

INPUT	
Species:	Pronghorn
Biologist:	Erika Peckham
Herd Unit & No.:	PR339 Black Hills
Model date:	07/23/12

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	147	156	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	147	156	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	63	161	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	5316	4036	8793	**18145**	5140	2304	7190	**14634**	2741	7015	**9756**				14000
1994	6007	2686	6875	**15568**	5784	1024	5462	**12271**	3287	7189	**10476**				14000
1995	5861	3221	7045	**16128**	5638	1901	5953	**13492**	2925	6486	**9410**	6518	1508	1508	14000
1996	5402	2866	6356	**14624**	5296	2022	5551	**12869**	2683	5760	**8443**				14000
1997	3918	2629	5645	**12192**	3881	2019	5299	**11198**	2447	5342	**7788**	7835	1696	1696	14000
1998	4162	2398	5235	**11795**	4147	1969	5070	**11185**	2783	5523	**8306**				14000
1999	4526	2728	5412	**12666**	4502	2314	5314	**12130**	2864	5523	**8387**	11352	3097	3097	14000
2000	4861	2807	5413	**13081**	4817	2092	5241	**12150**	2684	5507	**8191**				14000
2001	4457	2630	5397	**12484**	4424	2057	5222	**11703**	2945	5760	**8705**				14000
2002	4499	2886	5645	**13030**	4477	2283	5442	**12202**	3952	6763	**10714**	13946	1754	1754	14000
2003	5429	3873	6627	**15929**	5384	2937	6313	**14633**	3501	6534	**10035**				14000
2004	5360	3431	6403	**15195**	5304	2294	6020	**13619**	2892	6249	**9142**	14638	2690	2690	14000
2005	4840	2834	6124	**13799**	4744	1664	5701	**12108**	3447	7073	**10520**				14000
2006	6189	3378	6932	**16498**	6122	2189	6316	**14626**	4142	7821	**11963**				14000
2007	5650	4059	7665	**17374**	5578	2683	7001	**15263**	3622	7488	**11110**				14000
2008	4786	3550	7338	**15674**	4726	2113	6826	**13665**	3792	8033	**11825**	15209	3424	3424	14000
2009	4494	3716	7872	**16082**	4430	2378	7229	**14037**	2869	7196	**10064**				14000
2010	4123	2811	7052	**13986**	4045	1909	6590	**12544**	2329	6469	**8798**				14000
2011	3761	2282	6340	**12384**	3732	1654	6160	**11545**	2286	6112	**8399**				14000
2012	4892	2241	5990	**13123**	4868	1782	5818	**12469**	1398	4950	**6349**				14000
2013	3045	1371	4851	**9267**	3012	829	4592	**8433**				8115	1134		14000
2014															
2015															
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2017															
2018															
2019															
2020															
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.85		
1994	0.90			0.85		
1995	0.53			0.85		
1996	0.40			0.85		
1997	0.40			0.85		
1998	0.54			0.85		
1999	0.40			0.85		
2000	0.40			0.85		
2001	0.55			0.85		
2002	0.90			0.85		
2003	0.40			0.85		
2004	0.40			0.85		
2005	0.90			0.85		
2006	0.78			0.85		
2007	0.53			0.85		
2008	0.90			0.85		
2009	0.45			0.85		
2010	0.40			0.85		
2011	0.40			0.85		
2012	0.00			0.85		
2013	0.00			0.85		
2014						
2015						
2016						
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2025						

Parameters:	Optim cells
Adult Survival =	0.853
Initial Total Male Pop/10,000 =	0.404
Initial Female Pop/10,000 =	0.879

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		60.45	2.41	45.90	46.30	2.01	1575	1457	160	3192	42.9	18.2
1994		87.38	3.59	39.07	34.86	1.93	1511	1284	203	2998	61.9	20.5
1995		83.20	3.32	45.73	51.27	2.37	1200	993	203	2396	41.0	15.5
1996		84.99	3.89	45.09	54.67	2.85	767	732	96	1595	29.4	12.7
1997		69.41	4.08	46.57	40.79	2.85	555	315	34	904	23.2	6.1
1998		79.51	4.40	45.80	45.18	2.98	390	150	14	554	17.9	3.2
1999		83.62	4.72	50.40	53.33	3.44	376	89	22	487	15.2	1.8
2000		89.81	4.42	51.85	49.71	2.92	650	156	40	846	25.5	3.2
2001		82.58	3.93	48.73	48.26	2.71	521	159	30	710	21.8	3.2
2002		79.70	3.78	51.12	50.80	2.77	548	184	20	752	20.9	3.6
2003		81.92	4.01	58.44	61.68	3.28	851	286	41	1178	24.2	4.7
2004		83.72	3.84	53.59	53.35	2.80	1034	348	51	1433	33.1	6.0
2005		79.03	3.81	46.28	41.52	2.46	1064	385	88	1537	41.3	6.9
2006		89.29	4.17	48.73	50.46	2.80	1081	560	61	1702	35.2	8.9
2007		73.71	3.50	52.96	52.96	2.78	1251	603	65	1919	33.9	8.7
2008		65.21	3.23	48.37	43.80	2.47	1306	466	54	1826	40.5	7.0
2009		57.08	2.81	47.20	51.28	2.61	1216	585	58	1859	36.0	8.2
2010		58.47	3.26	39.86	48.40	2.87	820	420	71	1311	32.1	6.6
2011		59.33	3.99	35.99	31.60	2.64	571	164	27	762	27.5	2.8
2012		81.68	5.38	37.41	34.89	3.03	417	156	156	595	20.5	2.9
2013		62.77	3.51	28.25	43.98	2.76	492	236	236	758	39.5	5.4
2014												
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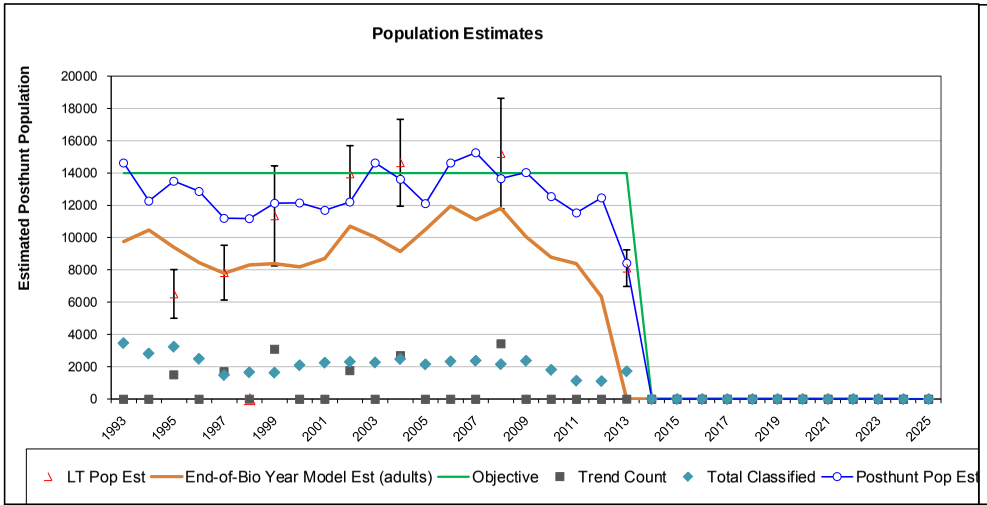
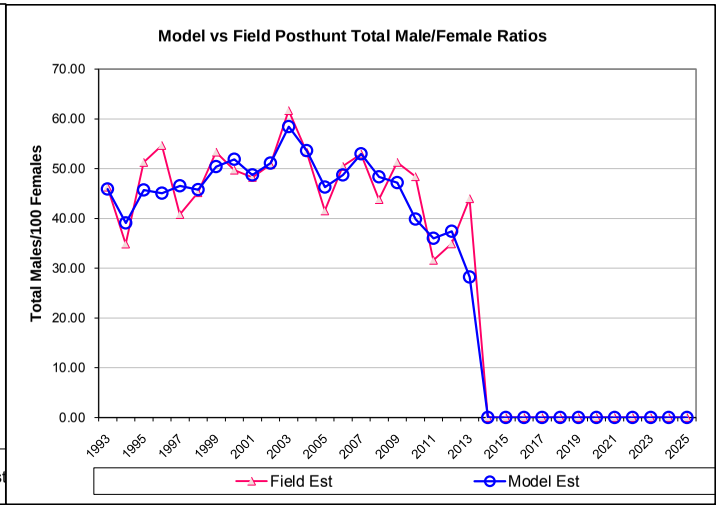
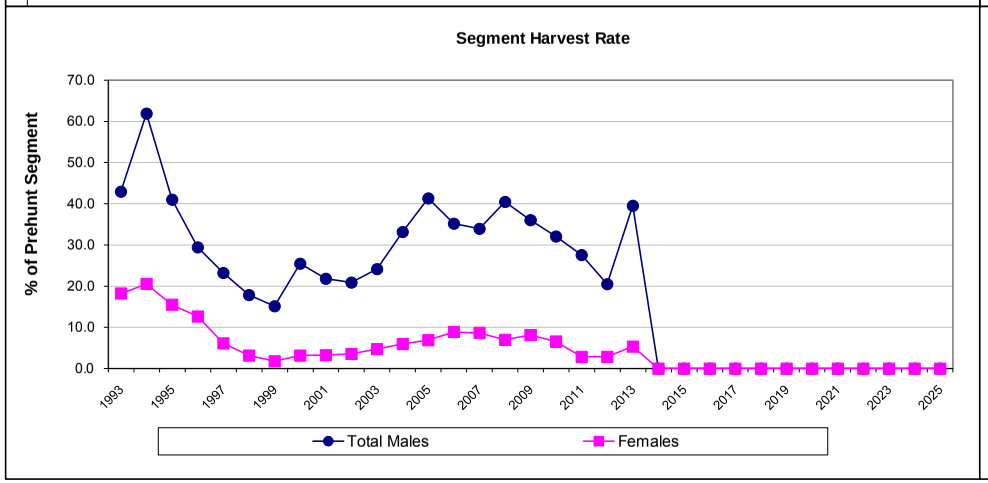
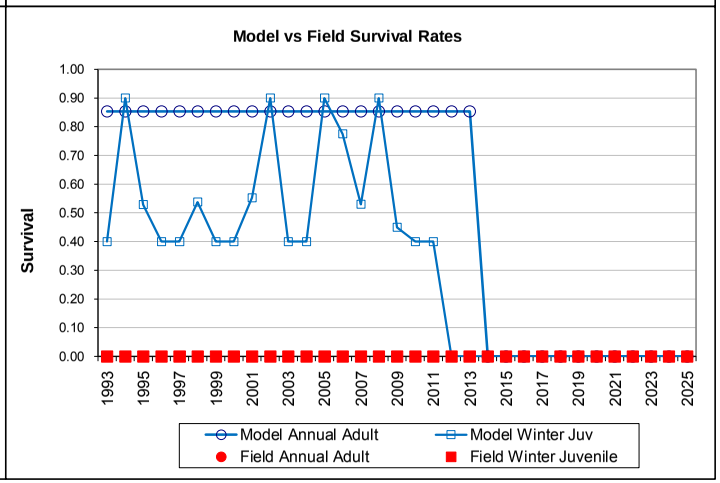
FIGURES









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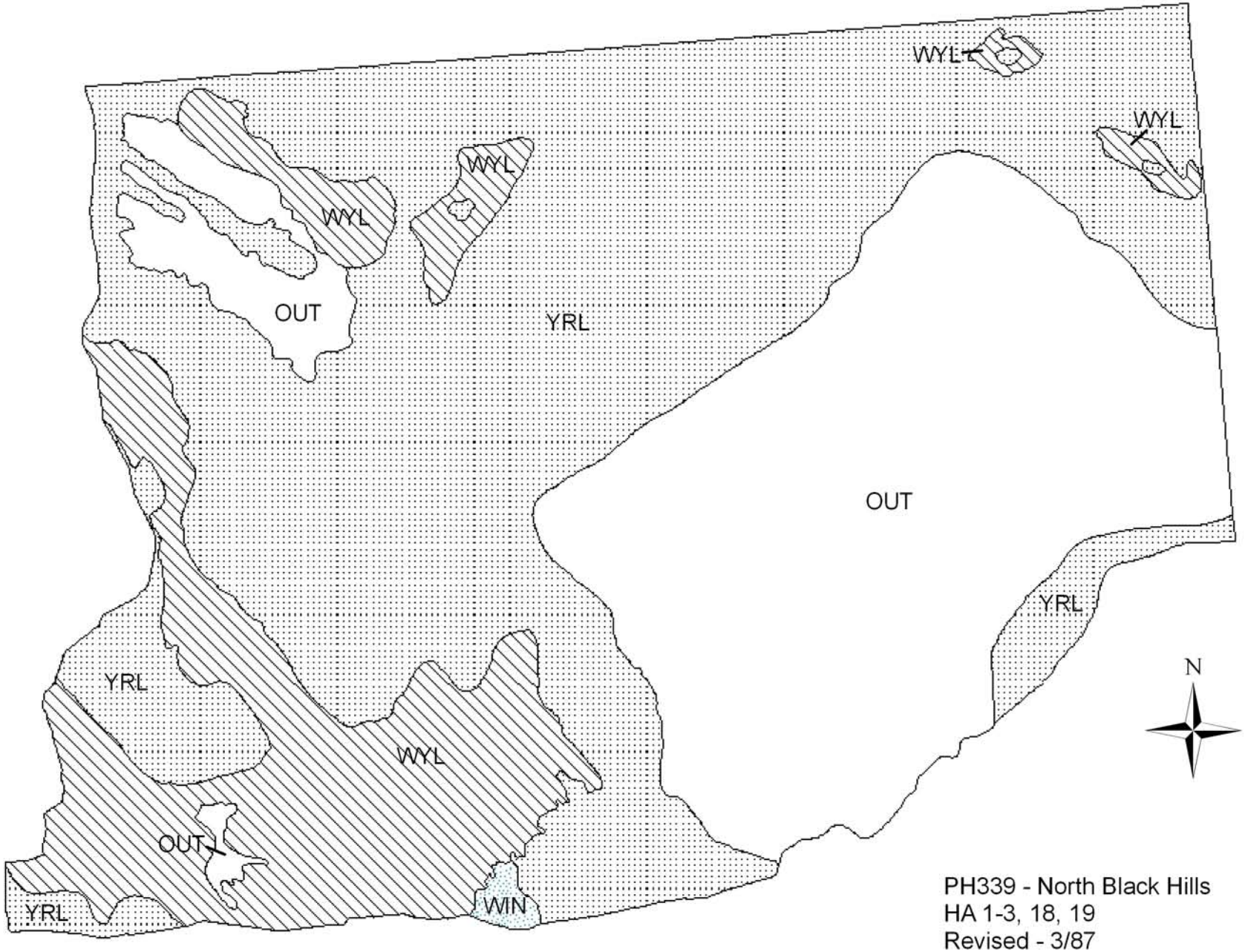
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PH339 - North Black Hills
HA 1-3, 18, 19
Revised - 3/87

2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR351 - GILLETTE

HUNT AREAS: 17

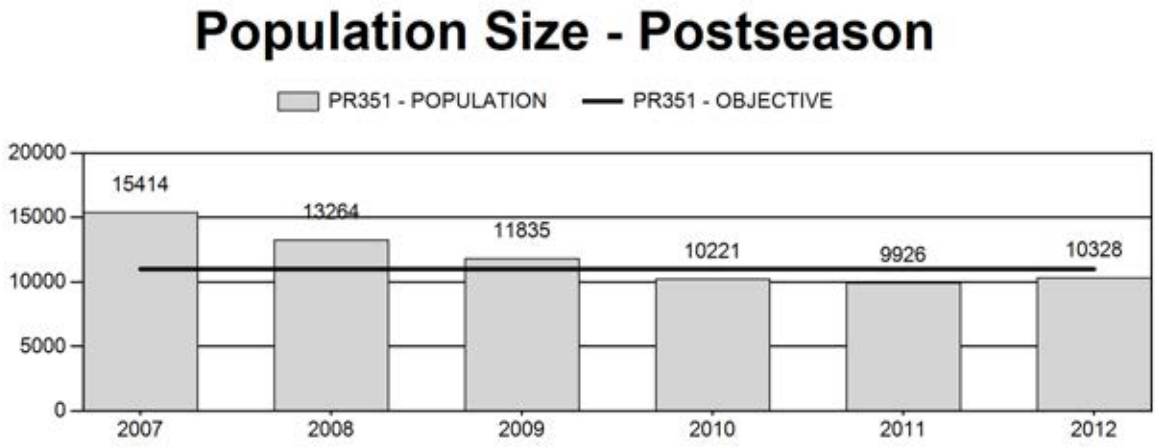
PREPARED BY: ERIKA PECKHAM

	2007 - 2011 Average	2012	2013 Proposed
Population:	12,132	10,328	9,190
Harvest:	1,288	991	1,075
Hunters:	1,386	979	1,040
Hunter Success:	93%	101%	103%
Active Licenses:	1,485	1,102	1,200
Active License Percent:	87%	90%	90%
Recreation Days:	4,440	3,488	3,650
Days Per Animal:	3.4	3.5	3.4
Males per 100 Females	50	37	
Juveniles per 100 Females	48	70	

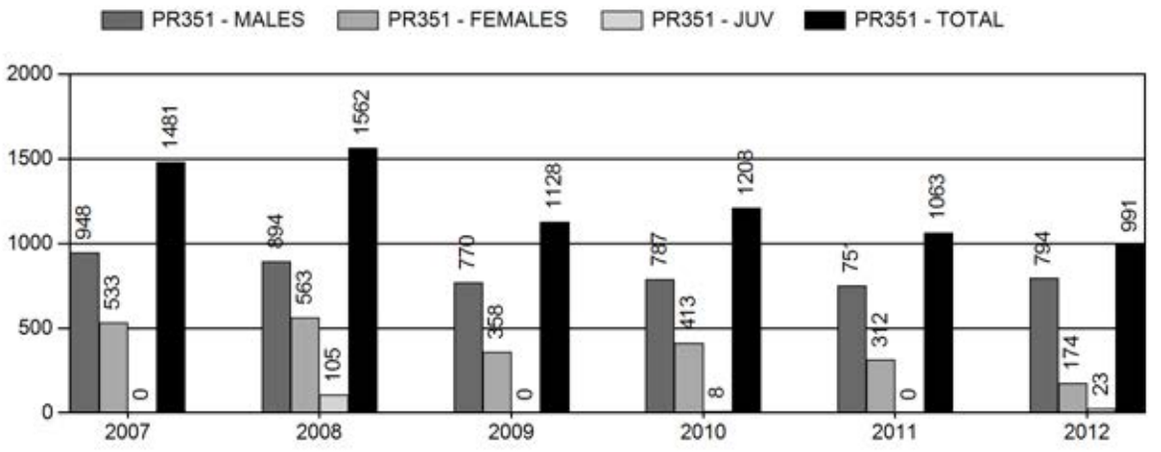
Population Objective:	11,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-6.1%
Number of years population has been + or - objective in recent trend:	3
Model Date:	02/20/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

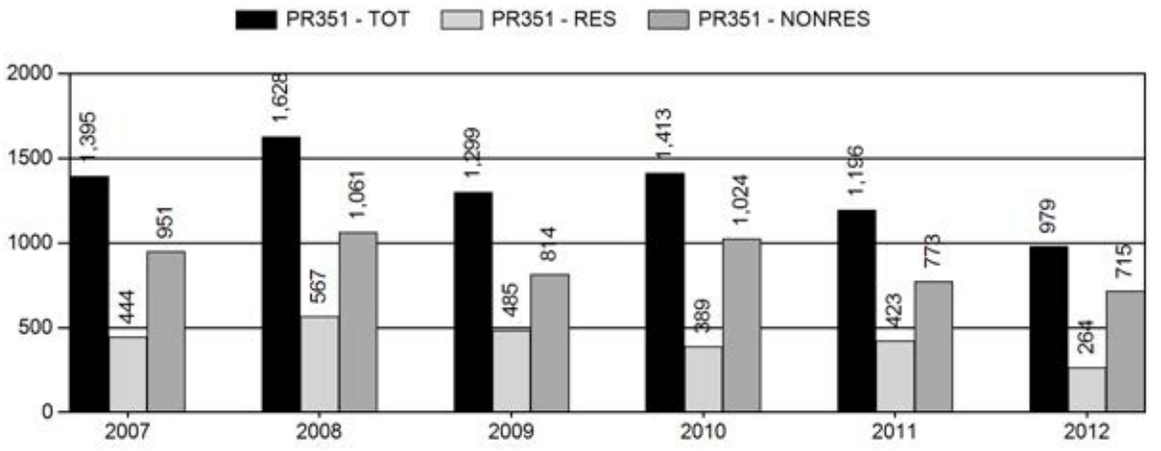
	JCR Year	Proposed
Females ≥ 1 year old:	4%	5.0%
Males ≥ 1 year old:	21.6%	41.2%
Juveniles (< 1 year old):	.1%	0%
Total:	7.47%	10.3%
Proposed change in post-season population:	4.3%	-11.0%



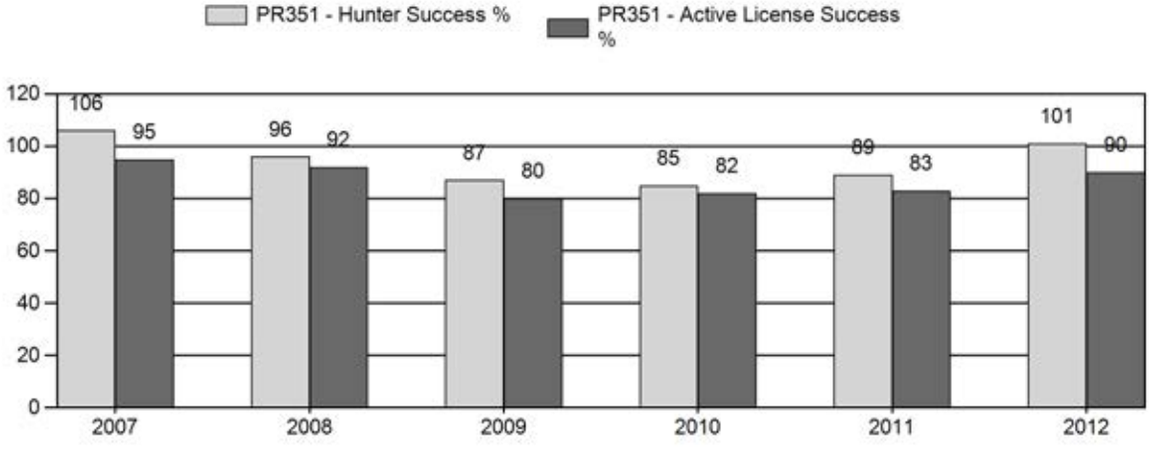
Harvest



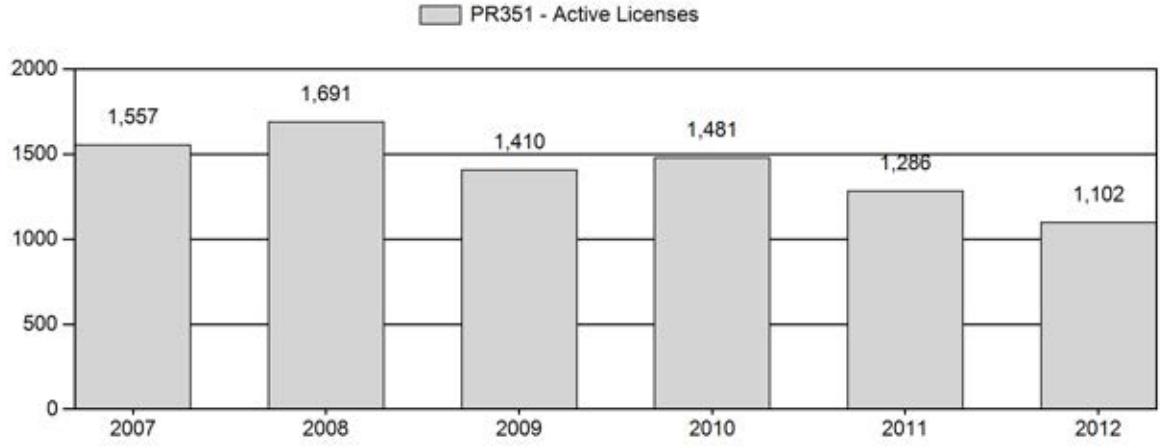
Number of Hunters



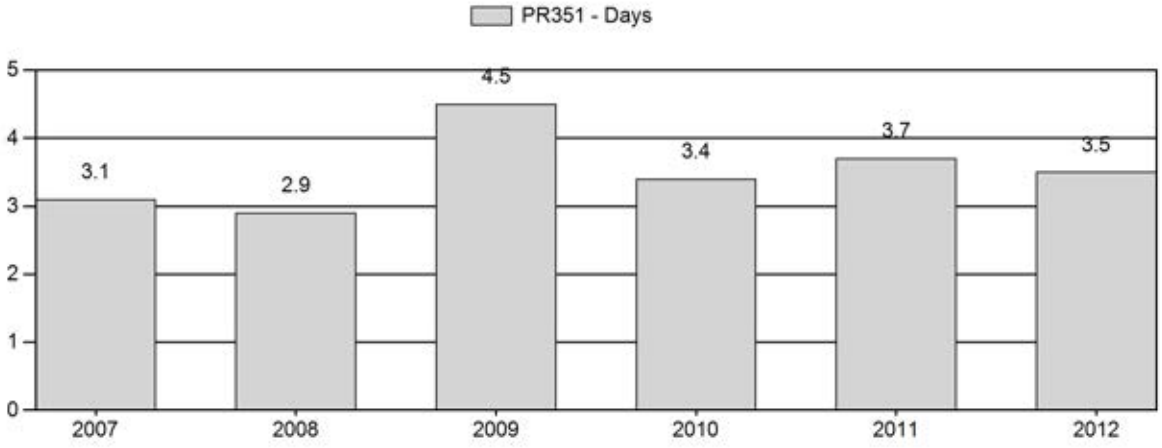
Harvest Success



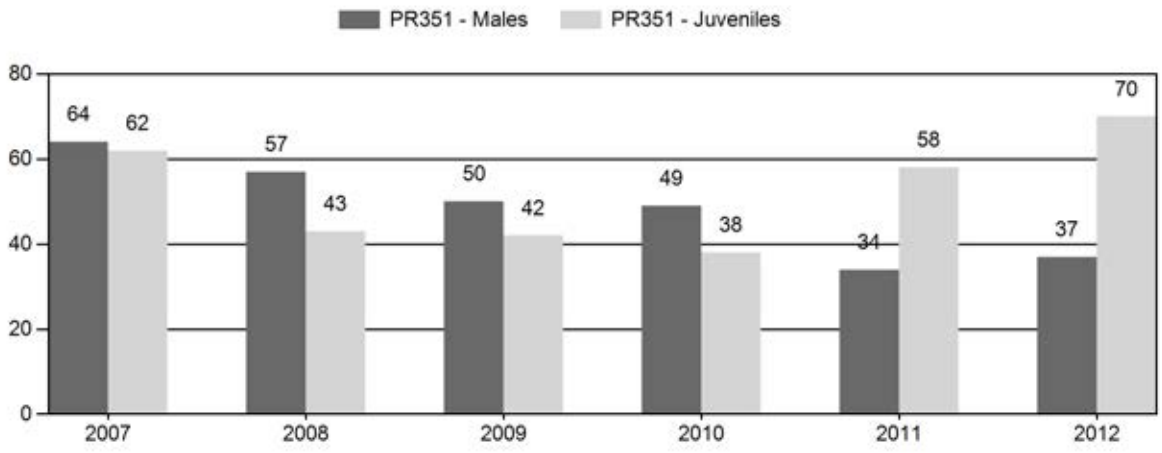
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR351 - GILLETTE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	17,043	209	318	527	28%	824	44%	508	27%	1,859	1,705	25	39	64	± 6	62	± 5	38
2008	14,982	201	396	597	29%	1,043	50%	449	21%	2,089	2,328	19	38	57	± 4	43	± 4	27
2009	13,076	144	486	630	26%	1,250	52%	527	22%	2,407	1,385	12	39	50	± 4	42	± 3	28
2010	11,550	112	437	549	26%	1,126	54%	429	20%	2,104	1,920	10	39	49	± 4	38	± 3	26
2011	11,095	75	301	376	18%	1,111	52%	640	30%	2,127	1,639	7	27	34	± 3	58	± 4	43
2012	11,428	78	214	292	18%	779	48%	545	34%	1,616	1,639	10	27	37	± 4	70	± 6	51

2013 HUNTING SEASONS
GILLETTE PRONGHORN HERD (PR351)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
17	1	Oct. 1	Oct. 31	1,100	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	400	Limited quota licenses; doe or fawn
Archery		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
17	1	+100
	6	+100
Herd Unit Total	**1**	**+100**
	6	**+100**

Management Evaluation
Current Postseason Population Management Objective: 11,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~10,300
2013 Proposed Postseason Population Estimate: ~9,200

Herd Unit Issues

The postseason population objective for the Gillette Pronghorn Herd Unit is 11,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1994. The largest issue with achieving adequate harvest in this herd is access, as most of the pronghorn are found on private lands.

Extensive coal bed methane development has occurred in the herd unit and has resulted in a network of roads and other development associated with the infrastructure required to support coal bed methane extraction. The increased traffic was an issue with hunting in the past, however in recent years, development and activity has tapered off substantially. The more pressing issue in this herd unit will be proper reclamation as these wells are abandoned.

Weather

Weather conditions throughout 2012 and into 2013 were extremely dry and warmer than normal. The winters of 2011-2012 and 2012-13 were mild and did not see much for snow accumulation. During the majority of these two winters, the ground was open, with minimal snowpack. As a result over winter survival was high. Although the spring and summer of 2012 were drier than normal, it appears that the fawn to doe ratio did not suffer.

Habitat

The SA creek habitat transect is located within this herd unit. The utilization is typically very light on this transect. In the fall of 2012, the transect survey showed the average leader growth to be 35mm, which is higher than anticipated, given the drought conditions that were experienced in the 2012 growing season.

Field Data

This herd has the potential for rapid growth as has been seen in years past. High fawn to doe ratios coupled with limited access have allowed this herd to exceed management objective in the past. In 2012 the fawn to doe ratio was up to 70, which is the highest this herd has experienced since 2006.

Hunter success in this herd unit has averaged 92% over the last 5 years, with similar success in preceding years as well. 2012 had an overall success rate of 102%.

Population

The "Constant Juvenile – Constant Adult Mortality Rate" (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC (172), they were all fairly close and this one appeared to most accurately represent what was occurring on the ground, and made best use of the available information. We conducted line transect surveys in 1995, 1998, 2000, 2002 and 2008 which provided independent population estimates that were similar to the model estimates. With the exception of the 2002 line transect population estimate, the model projections were in line with the line transect surveys. (Fair Model)

The 2012 post-season population estimate was about 10,300, which is the first increase since the population peaked in 2006 at around 16,500 individuals. Since 2006 the population has declined hitting a low in 2011 at an estimate of 9,900. This herd experienced poor fawn ratios form 2007-2011 with an average of 48 fawn:doe ratio in the preceding 5 years. 2012 saw an increase with a fawn:doe ratio of 70. The last line transect survey was conducted in this herd unit in June 2008, which resulted in an estimated population of 10,600 pronghorn at that time.

Management Strategy

Having adequate licenses available is imperative to keep harvest up on this herd when numbers warrant. In 2012 there were 1,300 licenses available, 1,000 Type 1 and 300 Type 6. 2012 license numbers were decreased as a result of the declining population at that time. Both types were sold out by season close. The traditional season in this hunt area has been the entire month

of October. This season time and length seems to be adequate to allow a reasonable harvest. The number of both Type 1 and Type 6 licenses were increased by 100 for the 2013 hunting season. Although the buck ratio was fairly low the last few years, it is felt that this herd can accommodate another 100 Type 1 licenses. The majority of landowners within this herd unit felt that a similar season as last year would be in line with their observations of antelope, with a few preferring more licenses issued. With improving fawn to doe ratios and high harvest success and landowner comments, it is felt that this herd can accommodate another 200 licenses to keep the population from going over objective.

If we attain the projected harvest of 1,075 and near normal fawn recruitment pronghorn population growth will slow and potentially decline slightly. Based on the population model, we predict a 2013 post-season population of about 9,200.

INPUT	
Species:	Pronghorn
Biologist:	Erika Peckham
Herd Unit & No.:	PR351-Gillette
Model date:	02/20/12

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	172	181	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	158	167	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	119	221	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	3254	4032	8757	**16042**	3211	3161	7989	**14362**	3608	7783	**11392**				11000
1994	6750	3536	7628	**17914**	6661	2442	6779	**15882**	4052	7828	**11880**				11000
1995	3378	3971	7671	**15020**	3213	2920	6622	**12755**	3349	6538	**9888**	6860	1624		11000
1996	4365	3283	6407	**14055**	4285	2333	5901	**12520**	3220	6364	**9585**				11000
1997	2684	3156	6237	**12077**	2655	2217	6129	**11002**	2608	6110	**8719**				11000
1998	2661	2556	5988	**11206**	2661	2062	5972	**10695**	2553	5996	**8549**	6840	1706		11000
1999	3372	2502	5876	**11750**	3372	2103	5853	**11328**	2831	6122	**8953**				11000
2000	4144	2774	5999	**12918**	4137	2059	5949	**12144**	2987	6444	**9431**	9141	1718		11000
2001	2917	2928	6315	**12160**	2913	2349	6267	**11529**	2866	6326	**9192**				11000
2002	3130	2809	6200	**12139**	3128	2251	6171	**11550**	2855	6316	**9171**	16636	2122		11000
2003	3422	2798	6189	**12410**	3417	2202	6104	**11722**	2898	6341	**9239**				11000
2004	4562	2840	6214	**13616**	4540	2195	6082	**12817**	3242	6672	**9914**				11000
2005	5310	3177	6539	**15025**	5300	2364	6290	**13954**	3608	7079	**10687**				11000
2006	7404	3536	6938	**17878**	7369	2561	6636	**16567**	4412	8029	**12441**				11000
2007	4851	4323	7869	**17043**	4851	3281	7282	**15414**	4218	7738	**11956**				11000
2008	3265	4134	7583	**14982**	3149	3151	6964	**13264**	3547	6890	**10437**	10625	2003		11000
2009	2847	3476	6752	**13076**	2847	2629	6359	**11835**	3045	6329	**9374**				11000
2010	2363	2984	6203	**11550**	2354	2118	5748	**10221**	2442	5634	**8076**				11000
2011	3181	2393	5522	**11095**	3181	1567	5178	**9926**	2194	5570	**7764**				11000
2012	3819	2150	5459	**11428**	3794	1279	5255	**10328**	2181	5649	**7829**				11000
2013	2700	2137	5536	**10373**	2673	1257	5261	**9190**							
2014															
2015															
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.63			0.84		
1994	0.63			0.84		
1995	0.63			0.84		
1996	0.63			0.84		
1997	0.63			0.84		
1998	0.63			0.84		
1999	0.63			0.84		
2000	0.63			0.84		
2001	0.63			0.84		
2002	0.63			0.84		
2003	0.63			0.84		
2004	0.63			0.84		
2005	0.63			0.84		
2006	0.63			0.84		
2007	0.63			0.84		
2008	0.63			0.84		
2009	0.63			0.84		
2010	0.63			0.84		
2011	0.63			0.84		
2012	0.63			0.84		
2013	0.63			0.84		
2014						
2015						
2016						
2017						
2018						
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2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.630
Adult Survival =	0.844
Initial Total Male Pop/10,000 =	0.403
Initial Female Pop/10,000 =	0.876

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		37.16	1.92	46.04	52.89	2.42	791	698	39	1528	21.6	8.8
1994		88.50	3.84	46.36	46.19	2.44	995	771	81	1847	31.0	11.1
1995		44.03	2.67	51.76	43.47	2.65	955	954	150	2059	26.5	13.7
1996		68.13	3.90	51.23	54.71	3.35	863	460	73	1396	28.9	7.9
1997		43.03	3.07	50.60	45.48	3.18	853	98	26	977	29.7	1.7
1998		44.44	3.26	42.69	52.74	3.65	449	15	0	464	19.3	0.3
1999		57.38	3.71	42.57	27.70	2.32	363	21	0	384	16.0	0.4
2000		69.08	4.03	46.24	53.34	3.38	650	46	7	703	25.8	0.8
2001		46.20	3.08	46.36	58.03	3.59	526	43	4	573	19.8	0.7
2002		50.49	3.27	45.31	42.76	2.93	507	26	2	535	19.9	0.5
2003		55.30	3.66	45.21	62.31	3.97	542	78	5	625	21.3	1.4
2004		73.42	5.18	45.71	57.17	4.35	587	120	20	727	22.7	2.1
2005		81.20	4.34	48.59	56.01	3.34	739	226	9	974	25.6	3.8
2006		106.73	8.03	50.96	49.12	4.63	886	274	32	1192	27.6	4.3
2007		61.65	3.48	54.94	63.96	3.57	948	533	0	1481	24.1	7.5
2008		43.05	2.43	54.51	57.24	2.94	894	563	105	1562	23.8	8.2
2009		42.16	2.19	51.48	50.40	2.46	770	358	0	1128	24.4	5.8
2010		38.10	2.16	48.11	48.76	2.54	787	413	8	1208	29.0	7.3
2011		57.61	2.86	43.33	33.84	2.02	751	312	0	1063	34.5	6.2
2012		69.96	3.91	39.38	37.48	2.57	792	185	23	1000	40.5	3.7
2013		48.78	2.61	38.61	46.05	2.52	800	250	25	1075	41.2	5.0
2014												
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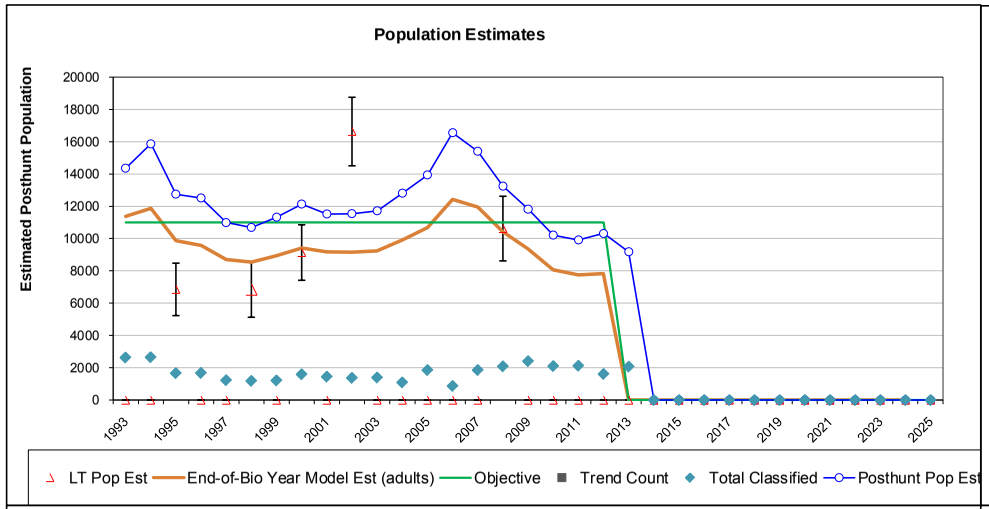
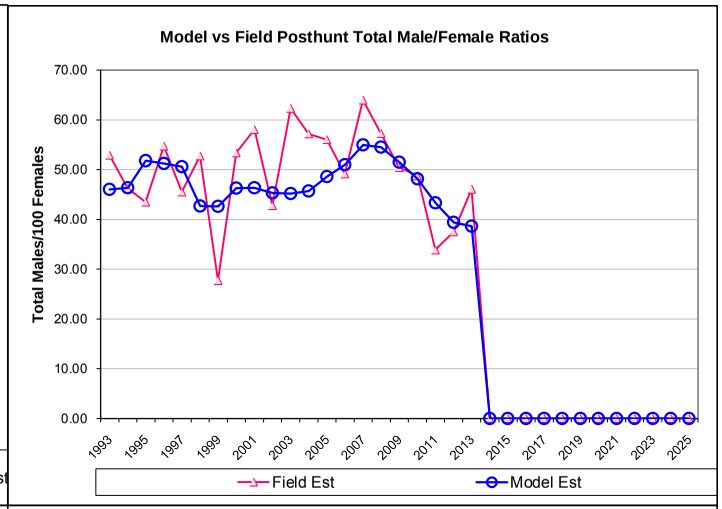
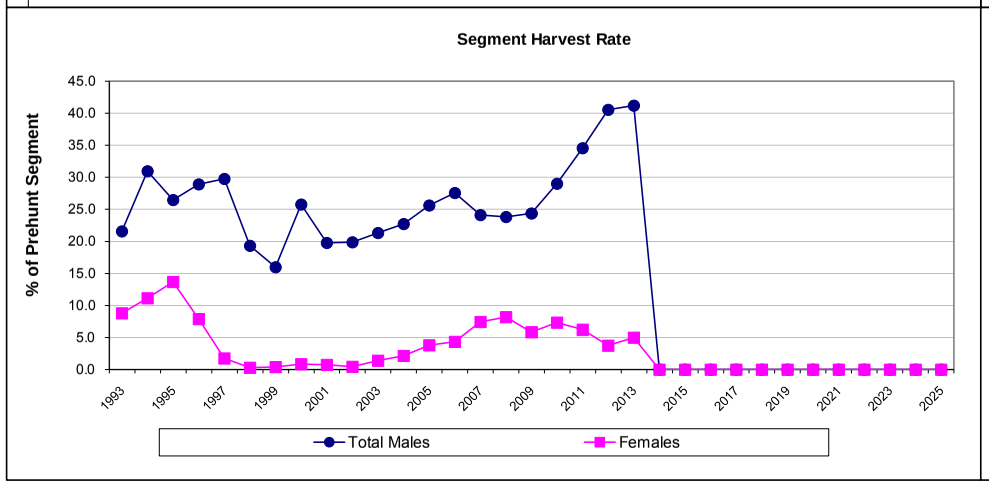
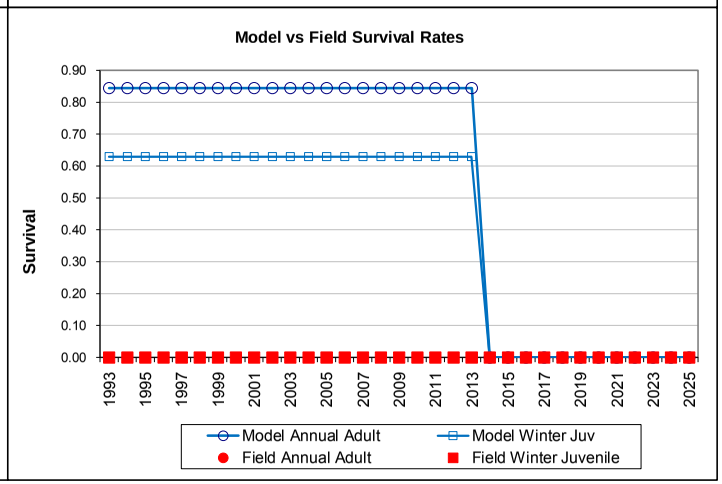
FIGURES









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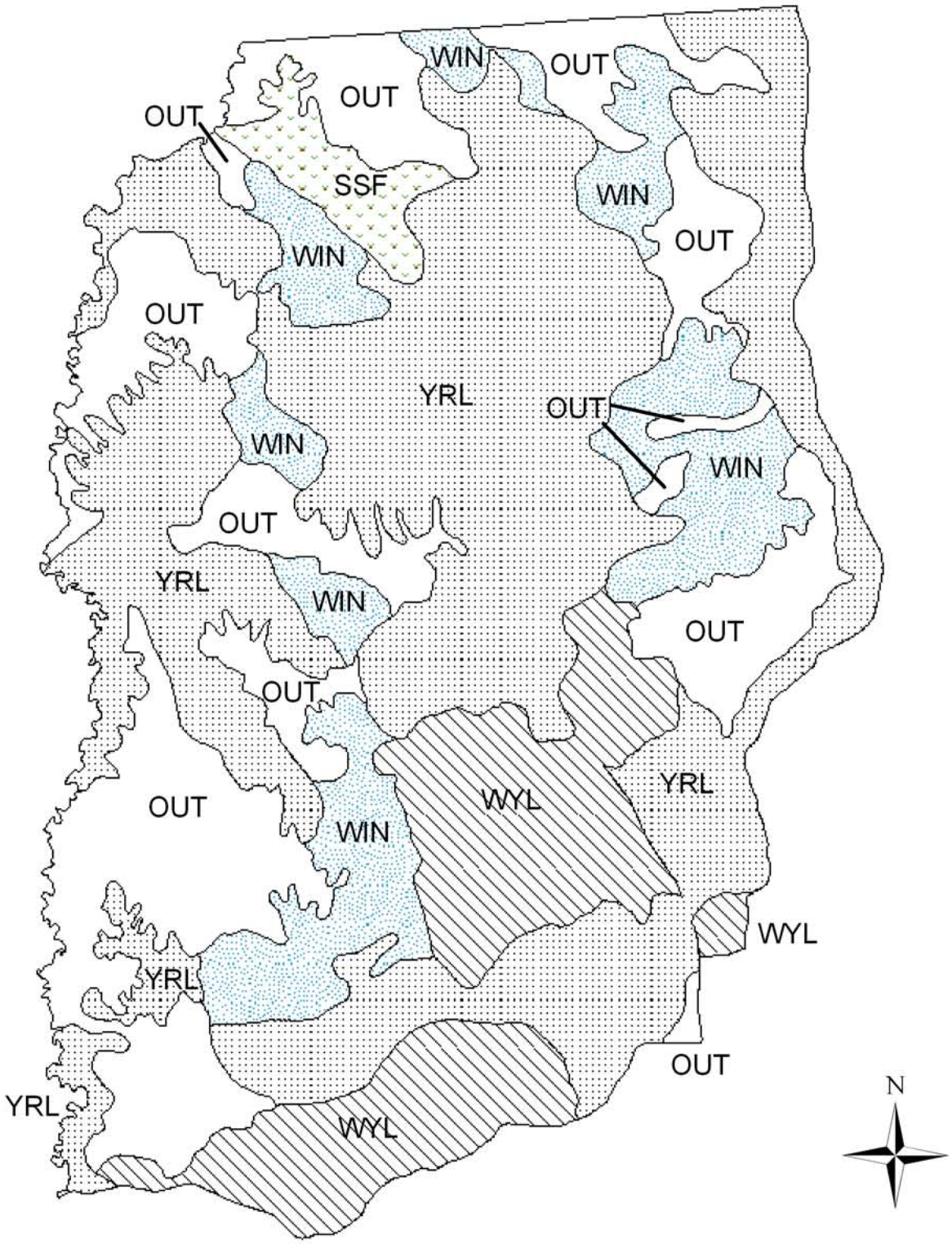


PH351 - Gillette
HA 17
Revised - 3/87

2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR352 - MIDDLE FORK

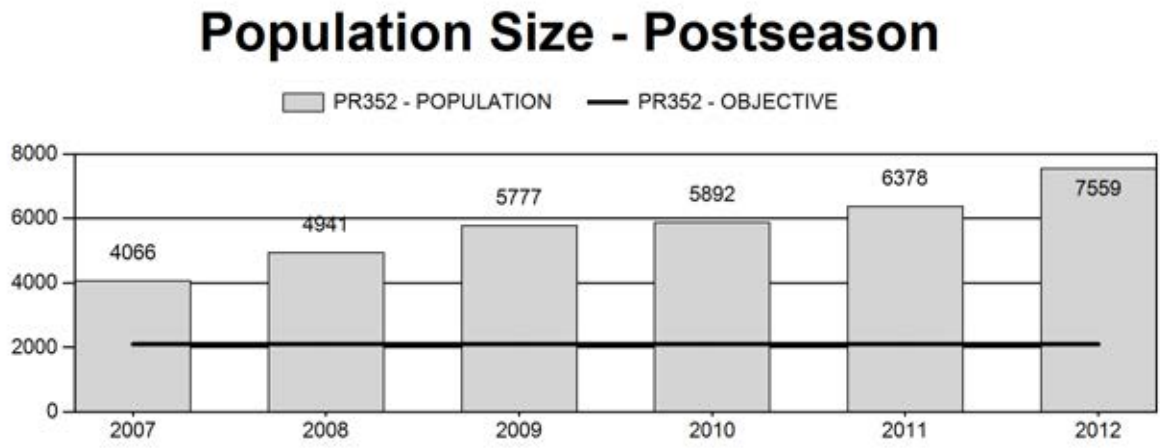
HUNT AREAS: 21
PREPARED BY: DAN THIELE

	2007 - 2011 Average	2012	2013 Proposed
Population:	5,411	7,559	8,049
Harvest:	790	939	1,025
Hunters:	846	1,112	1,150
Hunter Success:	93%	84%	89%
Active Licenses:	932	1,175	1,200
Active License Percent:	85%	80%	85%
Recreation Days:	3,010	4,174	4,300
Days Per Animal:	3.8	4.4	4.2
Males per 100 Females	49	62	
Juveniles per 100 Females	69	85	

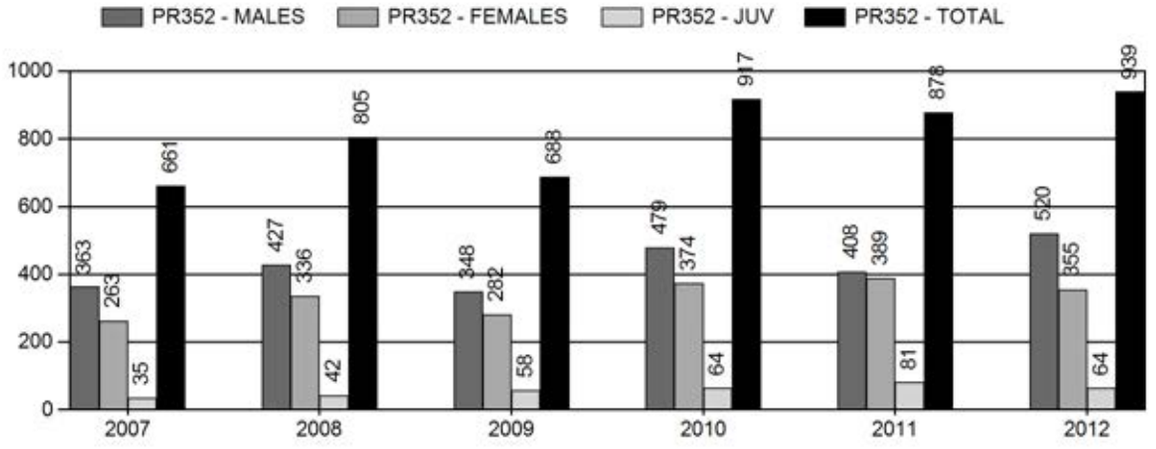
Population Objective:	2,100
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	260%
Number of years population has been + or - objective in recent trend:	10
Model Date:	5/23/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

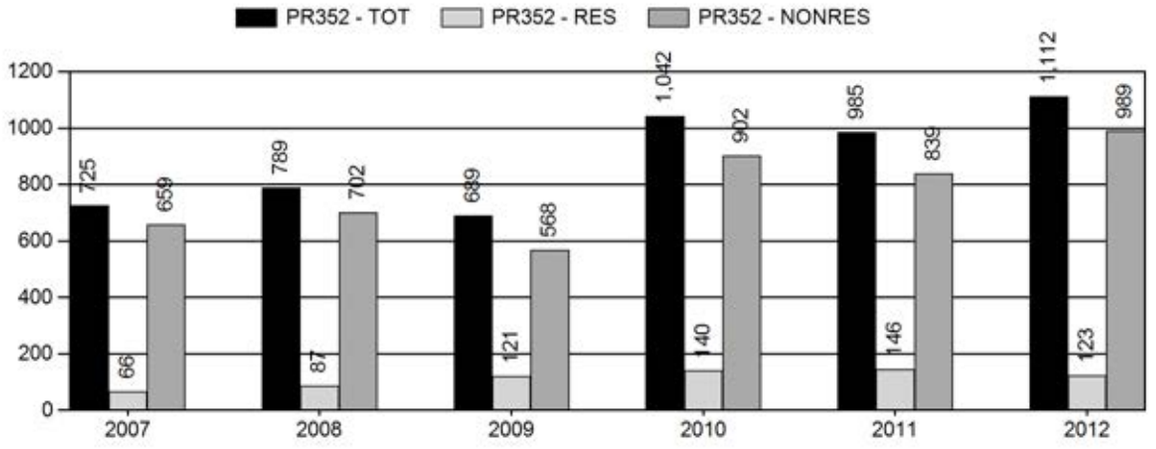
	JCR Year	Proposed
Females ≥ 1 year old:	19%	13%
Males ≥ 1 year old:	26%	25%
Juveniles (< 1 year old):	2%	0%
Total:	16%	11%
Proposed change in post-season population:	-4%	+6%



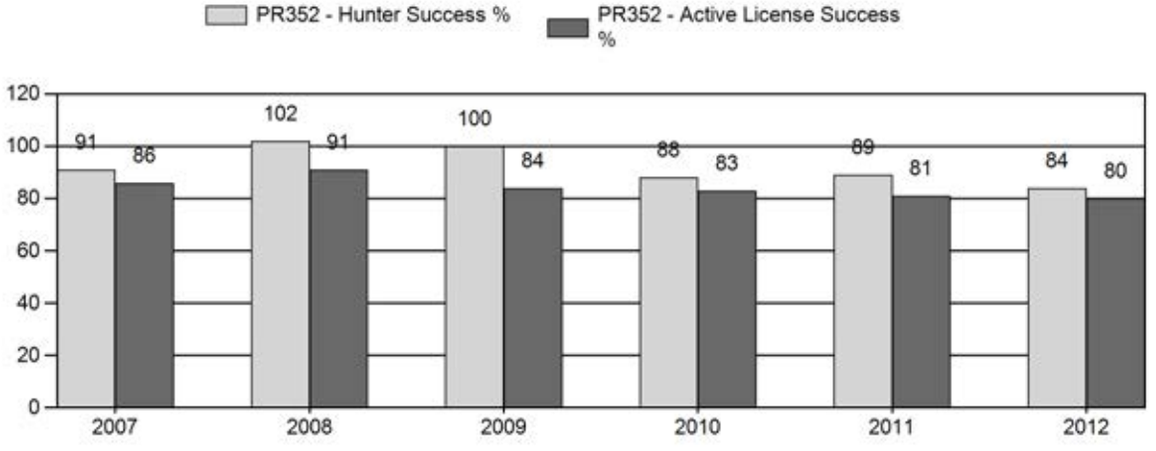
Harvest



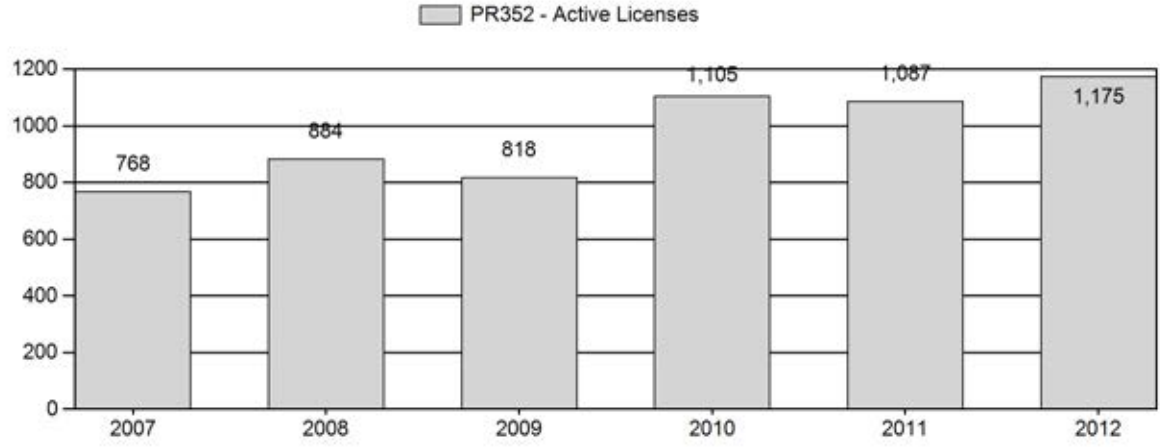
Number of Hunters



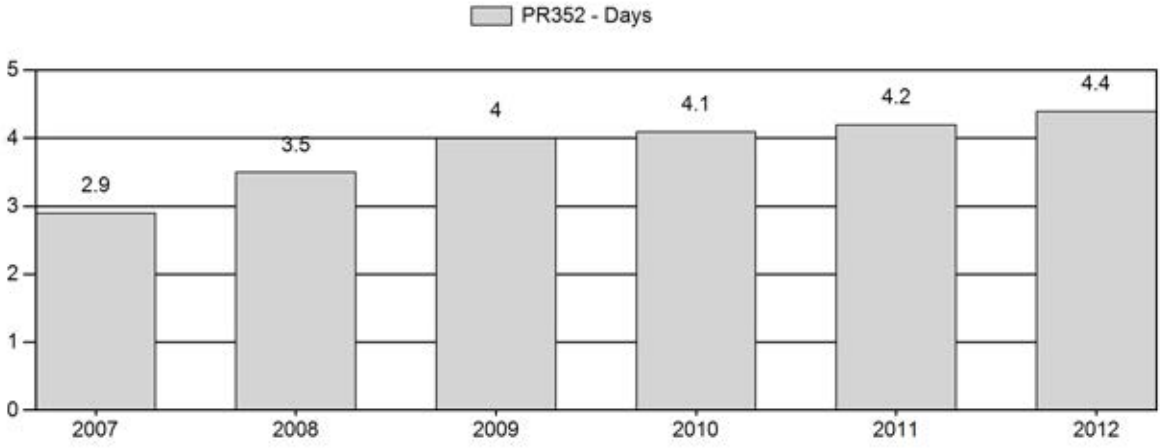
Harvest Success



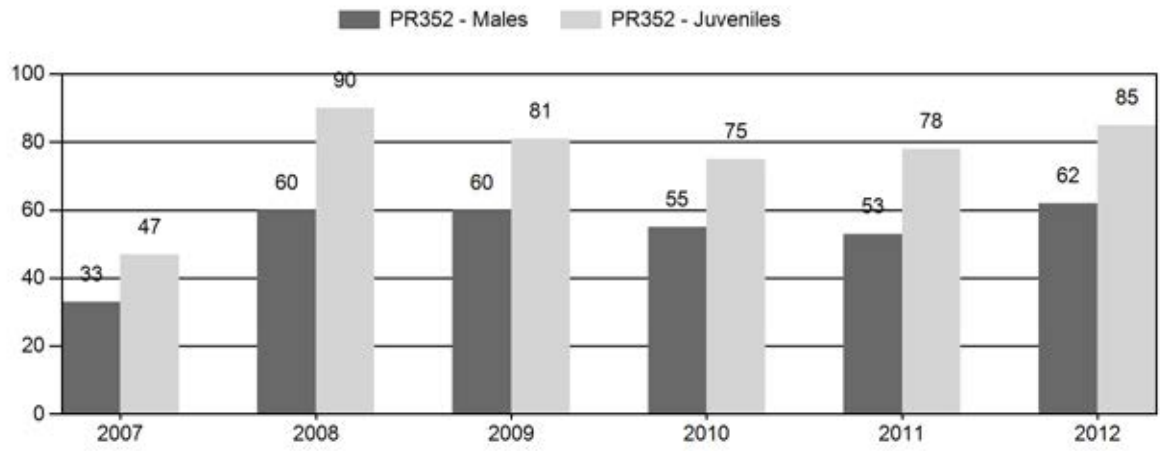
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR352 - MIDDLE FORK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	4,793	48	219	267	19%	801	56%	375	26%	1,443	718	6	27	33	± 3	47	± 4	35
2008	5,827	49	184	233	24%	388	40%	349	36%	970	2,845	13	47	60	± 7	90	± 10	56
2009	6,534	64	185	249	25%	412	41%	332	33%	993	2,285	16	45	60	± 7	81	± 9	50
2010	6,901	73	137	210	24%	379	43%	283	32%	872	2,196	19	36	55	± 7	75	± 9	48
2011	7,343	39	130	169	23%	321	43%	249	34%	739	2,305	12	40	53	± 8	78	± 10	51
2012	8,592	84	142	226	25%	362	40%	309	34%	897	2,824	23	39	62	± 8	85	± 10	53

2013 HUNTING SEASONS
MIDDLE FORK PRONGHORN HERD (PR352)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
21	1	Oct. 15	Oct. 31	750	Limited quota licenses; any antelope
	6	Oct. 15	Oct. 31	600	Limited quota licenses; doe or fawn
		Nov. 1	Nov. 15		Unused Area 21 Type 6 licenses valid on private land
Archery		Aug. 15	Oct. 14		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
21	1	+50
	6	-50
Herd Unit Total	**1**	**+50**
	6	**-50**

Management Evaluation
Current Postseason Population Management Objective: 2,100
Management Strategy: Recreational
2012 Postseason Population Estimate: ~7,500
2013 Proposed Postseason Population Estimate: ~8,000

Herd Unit Issues

The Middle Fork Pronghorn Herd Unit post-season population objective is 2,100 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1989 but will be reviewed this spring.

Area 21 extends from Interstate Highway 25 west to the Bighorn Mountain divide. Antelope densities are highest in the eastern section of the hunt area and lower on the mountain slope. The southeast corner of the hunt area and the mountain slope have large amounts of public land but the majority of the hunt area is private. Hunting on private land is controlled by outfitters and landowners who charge trespass fees and take a limited number of hunters. This causes a disproportionate amount of hunting pressure on accessible public lands. In many cases, the outfitted hunting which takes place on private land limits access as well as the ability to achieve adequate doe/fawn harvest. These private lands are under hunted and outfitters are doing little to manage this pronghorn population.

Weather

Weather in the area of the Middle Fork herd during 2012 turned extremely warm and dry after several good moisture years. The Palmer drought index for Climate Division 5 (Powder, Little

Missouri and Tongue drainages) showed "very moist" conditions for January 2012 but progressed to "extreme drought" by January 2013. The National Weather Service in Sheridan reported 2012 as the driest year since 1960 and the 4th driest year in 105 years with 9.53 inches of precipitation (14.16" ave). It was also the 6th warmest year on record with an average temperature of 48.1° F, the warmest year since 2006. Doe antelope were in good body condition coming out of the winter of 2011-12 so drought did not appear to impact fawn production.

Habitat

There is one Wyoming big sagebrush habitat transect in this herd unit. Utilization during the 2011-12 winter was very light (less than 5% of leaders browsed) as pronghorn were dispersed over winter/yearlong range. Production measured in September 2012 averaged 8 mm per leader compared to 33 mm per leader in 2011. Winter conditions were mild so above average mortality was not observed.

Field Data

Preseason classifications yielded a fawn ratio of 85:100, the second highest of the six year period. Fawn ratios have averaged 82:100 over the last five years providing adequate production to support an increasing harvest trend. No significant mortality events have been documented in the last six years. Postseason landowner surveys indicate that the population has decreased over the last five years. In 2012, 57% of landowners were satisfied with pronghorn numbers while 29% desired more pronghorn and 14% reported there were too many pronghorn. The last line transect survey was flown in 2006 resulting in an end of year population estimate of 6,375 pronghorn, the highest estimate to date. The hunter satisfaction survey showed 84% of hunters in 2012 were either satisfied or very satisfied.

Harvest Data

Harvest for the six year period peaked in 2012 at 939 pronghorn which is also the highest harvest since at least 1985. The 2012 buck harvest matched the 1985 high of 520 bucks. Doe/fawn harvest reached a new high in 2011. Active license success has trended down since 2008, falling to 80% in 2012. However, while Type 1 license success remained high at 85%, Type 6 license success fell to 72%. Conversely, hunter effort is trending upward, topping out at 4.4 days per animal harvested in 2012. License sales continued an increasing trend and both Type 1 and Type 6 licenses nearly sold out in 2012.

Population

This population is estimated at 7,500 pronghorn, well above the population objective. The population estimate was generated with the newly adopted EXCEL spreadsheet model. The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) model was chosen as it produced the lowest AIC value (88). The model attempts to track seven line transect surveys over the last 20 years, the last in 2006. The 2006 estimate was the highest to date but the model does not align though its confidence interval. The model indicates this population has nearly doubled since 2007 which is highly unlikely given the record harvest in recent years. Inadequate classification samples and the fluctuating buck ratios may contribute to the questionable results. The population estimate is similar to the POP-II estimate, however, the POP-II model predicted a decreasing trend.

The population model's increasing trend appears to conflict with harvest data which shows decreasing hunter success and increasing hunter effort reflective of tougher hunting conditions due to lower pronghorn numbers. Given that record harvest is not dampening the model's growth rate it is difficult to put much credibility in the outputs. Therefore, the model is considered a poor model.

Management Summary

Changes made for the 2013 hunting season included increasing the Type 1 license quota by 50 licenses to take advantage of the high buck ratio and continued high hunter success. The Type 6 quota was reduced 50 licenses in response to low hunter success on this license type. If expected harvest is achieved a postseason population estimate of 8,000 pronghorn is projected. However, managers expect this population to actually decrease with this level of harvest.

INPUT	
Species:	Pronghorn
Biologist:	Dan Thiele
Herd Unit & No.:	Middle Fork (352)
Model date:	05/23/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	121	130	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	79	88	☑ SCJ,SCA	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	73	163	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	637	667	1286	**2590**	599	409	1050	**2058**	503	1116	**1619**	1670	700		2100
1994	836	493	1094	**2422**	817	302	861	**1980**	608	1139	**1748**				2100
1995	765	596	1117	**2478**	735	413	964	**2111**	523	1052	**1576**	1467	739		2100
1996	937	513	1031	**2481**	909	408	873	**2191**	561	1001	**1562**				2100
1997	703	550	981	**2234**	699	411	956	**2066**	552	1081	**1633**	1473	270		2100
1998	957	541	1059	**2557**	957	401	1019	**2378**	570	1167	**1737**				2100
1999	1037	559	1144	**2740**	1025	417	1125	**2567**	807	1492	**2299**	3367	623		2100
2000	1035	791	1462	**3288**	1032	623	1427	**3082**	1006	1783	**2789**				2100
2001	1144	986	1747	**3877**	1133	834	1684	**3651**	1249	2067	**3316**				2100
2002	1447	1224	2026	**4697**	1409	1041	1981	**4432**	1304	2211	**3515**	3264	1104		2100
2003	1719	1278	2167	**5164**	1708	1034	2064	**4805**	1463	2457	**3920**				2100
2004	1776	1434	2408	**5618**	1751	1150	2355	**5256**	1431	2598	**4029**	5190	2637		2100
2005	1863	1402	2546	**5811**	1841	1049	2394	**5284**	1349	2648	**3997**				2100
2006	1477	1322	2595	**5395**	1444	969	2356	**4770**	1189	2522	**3710**	6375	1949		2100
2007	1157	1165	2471	**4793**	1119	766	2182	**4066**	1159	2520	**3679**				2100
2008	2221	1136	2470	**5827**	2175	666	2100	**4941**	1489	2867	**4357**				2100
2009	2264	1460	2810	**6534**	2200	1077	2500	**5777**	1696	3060	**4756**				2100
2010	2240	1662	2999	**6901**	2169	1135	2588	**5892**	1806	3203	**5009**				2100
2011	2435	1770	3139	**7343**	2346	1321	2711	**6378**	2102	3596	**5698**				2100
2012	3008	2060	3524	**8592**	2938	1488	3133	**7559**	2391	3874	**6265**				2100
2013	3037	2343	3797	**9177**	2982	1765	3302	**8049**							2100
2014															2100
2015															2100
2016															2100
2017															2100
2018															2100
2019															2100
2020															2100
2021															2100
2022															2100
2023															2100
2024															2100
2025															2100

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.45			0.94		
1994	0.80			0.94		
1995	0.40			0.94		
1996	0.40			0.94		
1997	0.47			0.94		
1998	0.40			0.94		
1999	0.80			0.94		
2000	0.80			0.94		
2001	0.80			0.94		
2002	0.46			0.94		
2003	0.57			0.94		
2004	0.40			0.94		
2005	0.40			0.94		
2006	0.40			0.94		
2007	0.80			0.94		
2008	0.80			0.94		
2009	0.63			0.94		
2010	0.69			0.94		
2011	0.80			0.94		
2012	0.66			0.94		
2013	0.65			0.94		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.650
Adult Survival =	0.937
Initial Total Male Pop/10,000 =	0.067
Initial Female Pop/10,000 =	0.129

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		49.54	4.13	51.84	51.84	4.26	234	215	35	484	38.6	18.4
1994		76.44	6.08	45.03	43.56	4.14	173	212	17	402	38.6	21.3
1995		68.49	5.35	53.40	60.05	4.88	167	139	27	333	30.8	13.7
1996		90.83	7.16	49.74	47.34	4.54	95	144	25	264	20.4	15.4
1997		71.63	6.52	56.01	55.02	5.43	126	23	4	153	25.2	2.6
1998		90.42	8.12	51.10	55.17	5.73	127	36	0	163	25.8	3.7
1999		90.69	7.72	48.84	45.17	4.76	129	17	11	157	25.4	1.6
2000		70.82	5.85	54.07	46.46	4.39	152	32	3	187	21.2	2.4
2001		65.47	5.70	56.44	55.86	5.11	138	57	10	205	15.4	3.6
2002		71.41	4.26	60.41	67.56	4.10	166	41	34	241	14.9	2.2
2003		79.33	4.89	58.97	59.33	3.99	222	94	10	326	19.1	4.8
2004		73.77	4.75	59.56	68.66	4.52	258	48	23	329	19.8	2.2
2005		73.18	4.18	55.09	61.07	3.68	321	138	20	479	25.2	6.0
2006		56.93	3.50	50.96	63.24	3.76	321	217	30	568	26.7	9.2
2007		46.82	2.93	47.13	33.33	2.36	363	263	35	661	34.3	11.7
2008		89.95	6.64	45.98	60.05	4.98	427	336	42	805	41.4	15.0
2009		80.58	5.94	51.95	60.44	4.85	348	282	58	688	26.2	11.0
2010		74.67	5.87	55.41	55.41	4.77	479	374	64	917	31.7	13.7
2011		77.57	6.55	56.40	52.65	5.00	408	389	81	878	25.4	13.6
2012		85.36	6.61	58.47	62.43	5.29	520	355	64	939	27.8	11.1
2013		80.00	6.20	61.71	56.00	4.83	525	450	50	1025	24.6	13.0
2014												
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2016												
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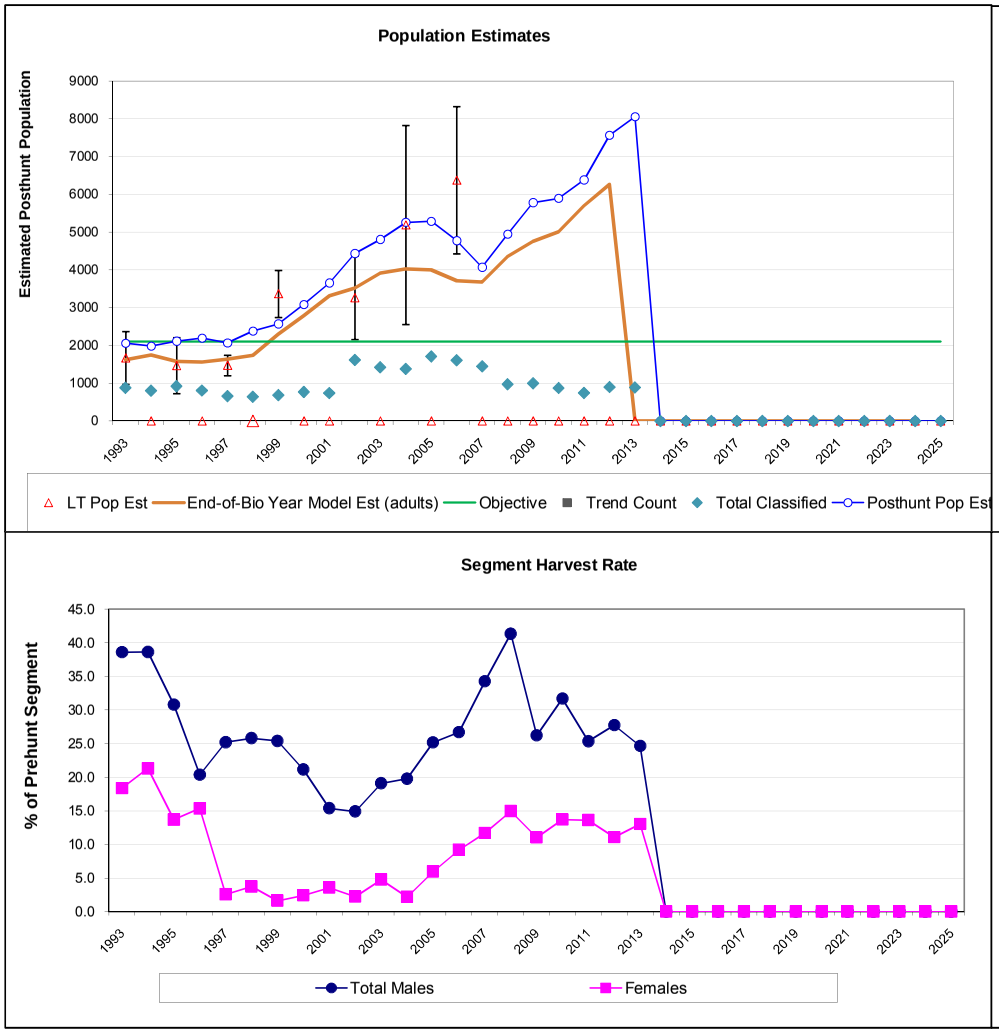
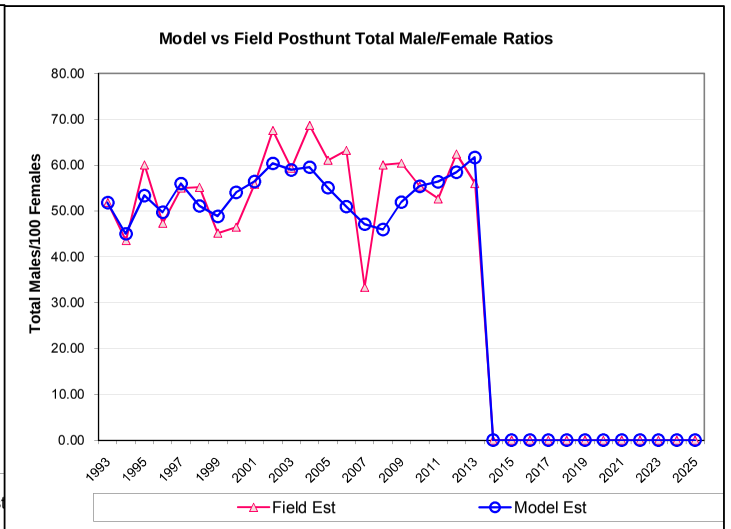
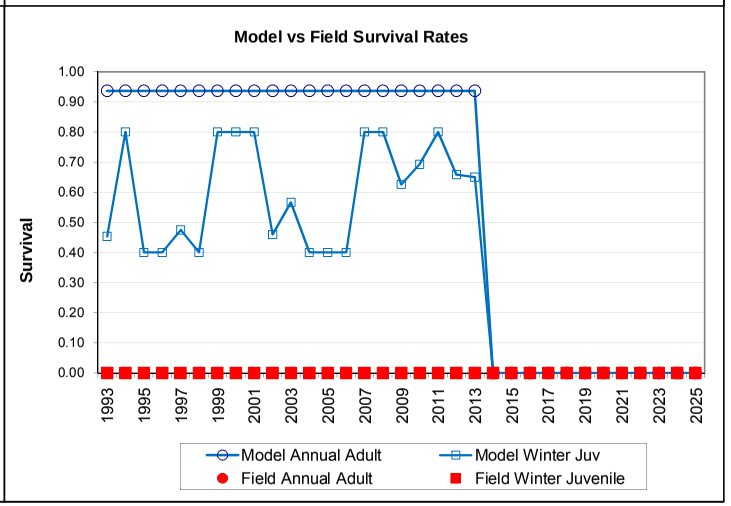
2025												

FIGURES







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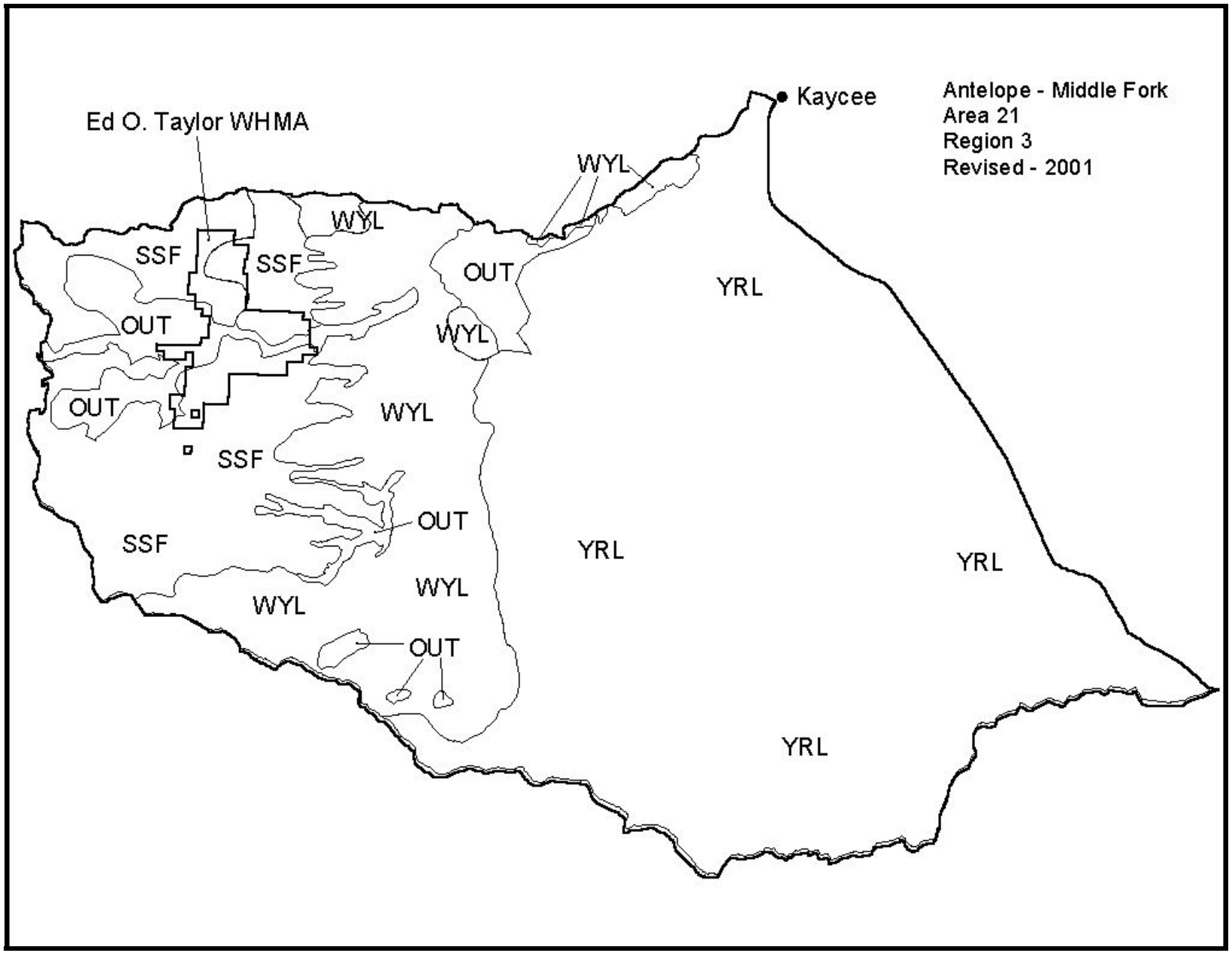
Kaycee
Antelope - Middle Fork
Area 21
Region 3
Revised - 2001
Ed O. Taylor WHMA
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2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR353 - UCROSS

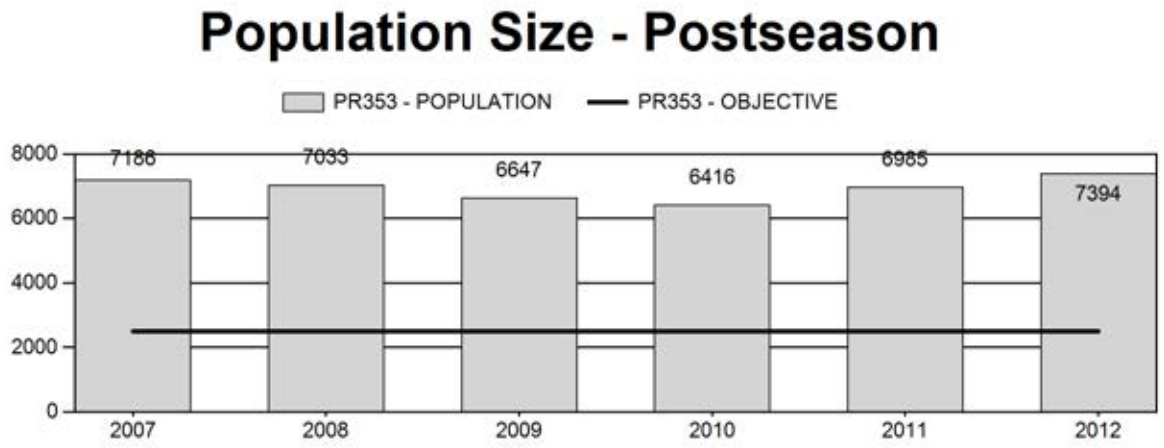
HUNT AREAS: 10, 16
PREPARED BY: TIM THOMAS

	2007 - 2011 Average	2012	2013 Proposed
Population:	6,853	7,394	7,657
Harvest:	682	753	700
Hunters:	662	802	750
Hunter Success:	103%	94%	93 %
Active Licenses:	796	933	850
Active License Percent:	86%	81%	82 %
Recreation Days:	2,416	2,879	2,500
Days Per Animal:	3.5	3.8	3.6
Males per 100 Females	64	62	
Juveniles per 100 Females	62	84	

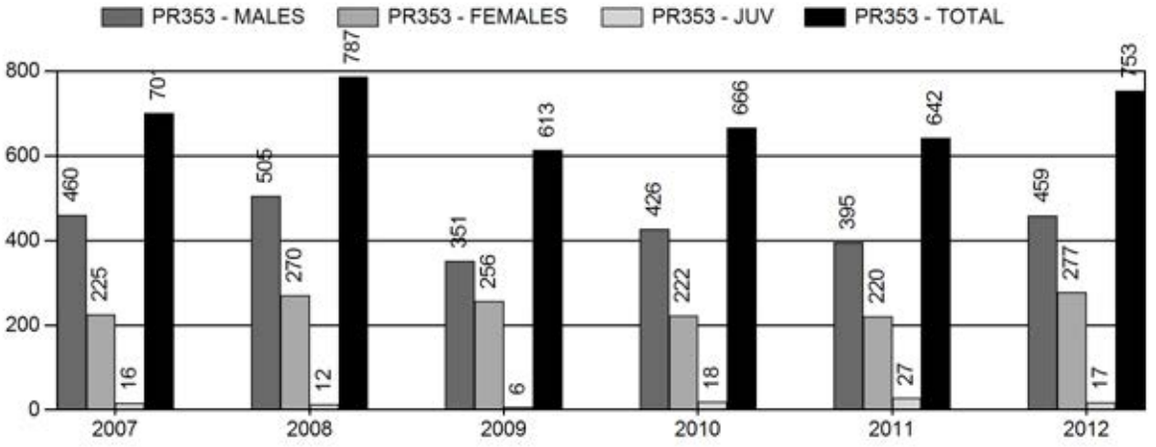
Population Objective:	2,500
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	196%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/26/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

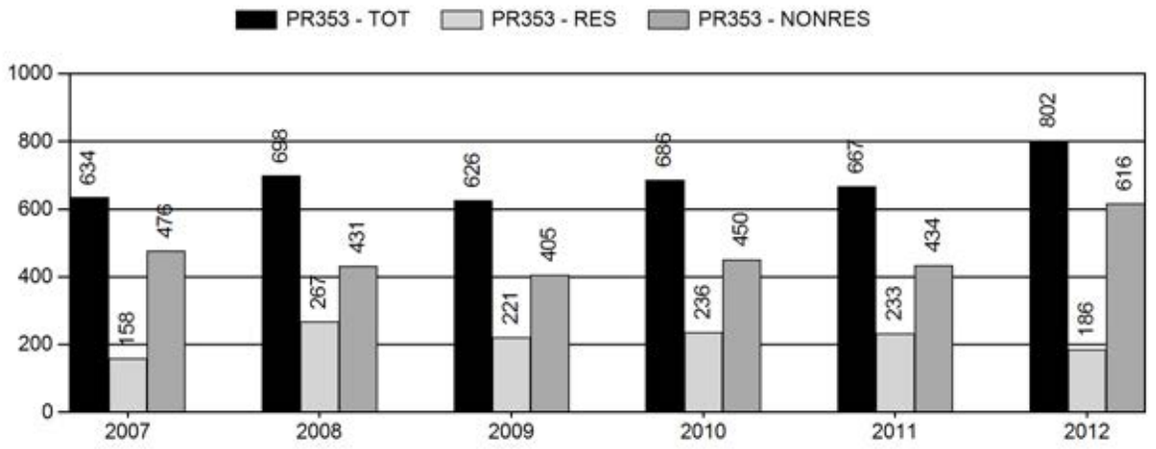
	JCR Year	Proposed
Females ≥ 1 year old:	9%	8%
Males ≥ 1 year old:	24%	20%
Juveniles (< 1 year old):	1%	1%
Total:	9%	8%
Proposed change in post-season population:	7%	3%



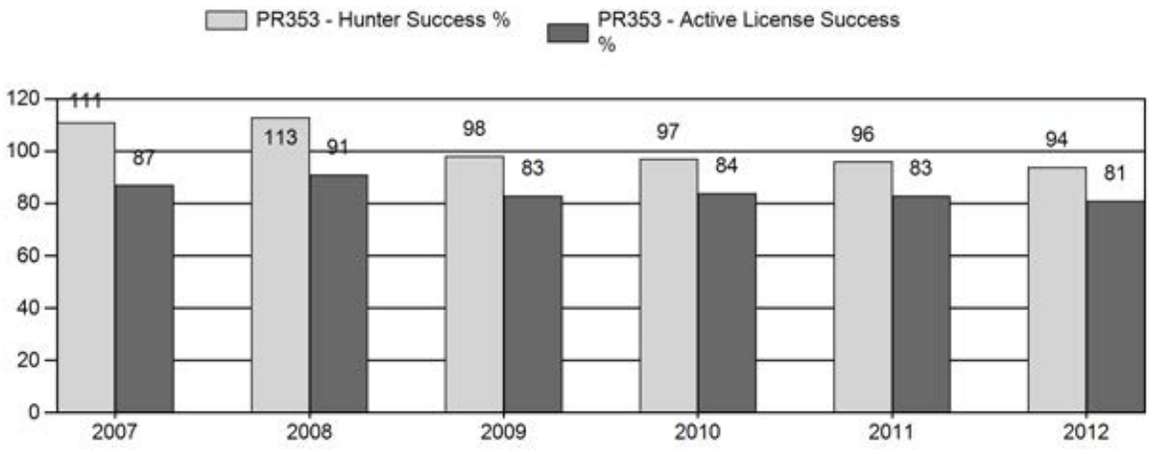
Harvest



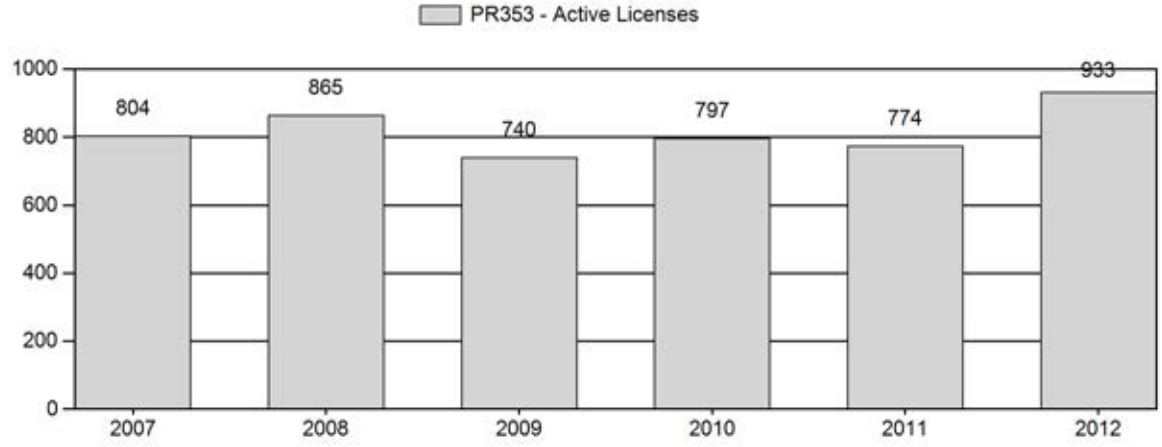
Number of Hunters



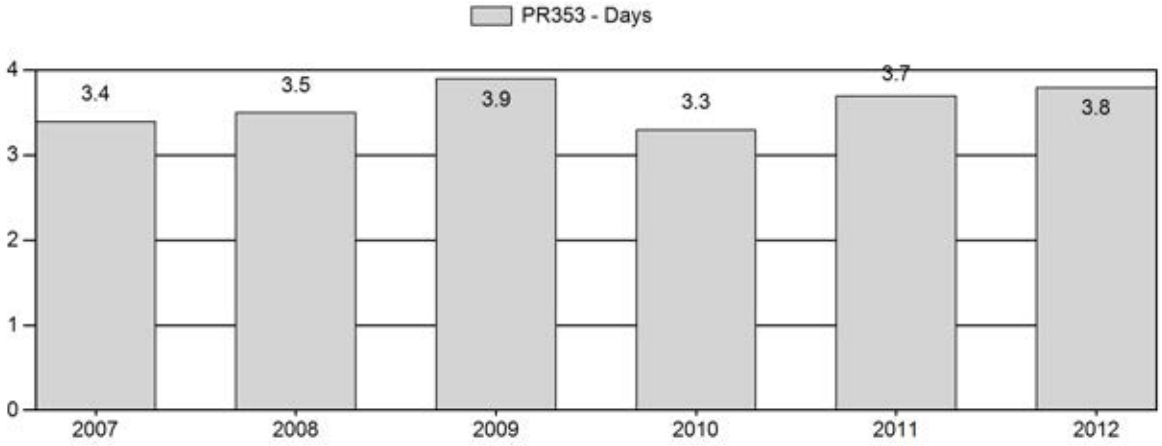
Harvest Success



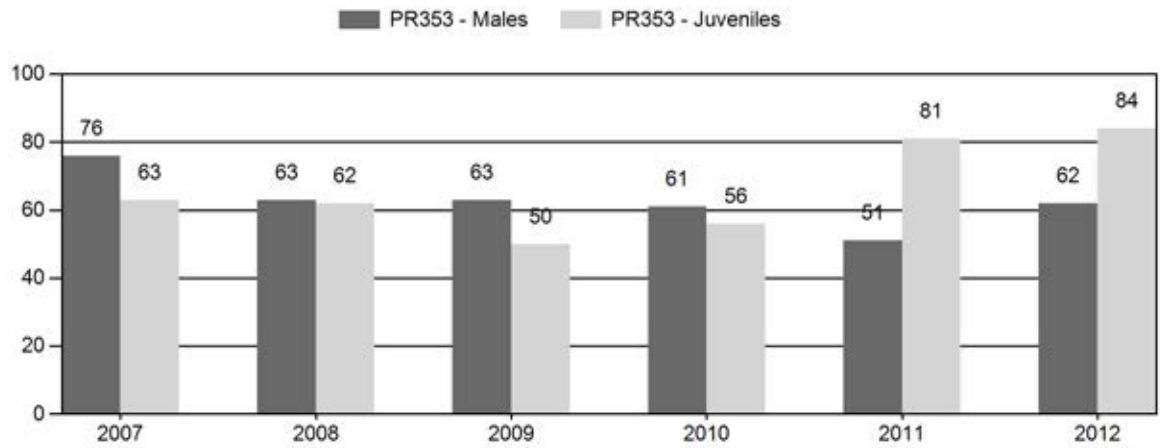
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR353 - UCROSS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	7,957	144	337	481	32%	637	42%	401	26%	1,519	1,739	23	53	76	± 7	63	± 6	36
2008	7,899	166	427	593	28%	938	44%	583	28%	2,114	2,057	18	46	63	± 5	62	± 5	38
2009	7,321	46	271	317	29%	505	47%	254	24%	1,076	1,887	9	54	63	± 7	50	± 6	31
2010	7,148	111	259	370	28%	603	46%	335	26%	1,308	1,801	18	43	61	± 6	56	± 6	34
2011	7,691	51	156	207	22%	406	43%	328	35%	941	2,612	13	38	51	± 7	81	± 9	54
2012	8,222	104	172	276	25%	446	41%	373	34%	1,095	0	23	39	62	± 7	84	± 9	52

2013 HUNTING SEASONS
UCROSS PRONGHORN HERD (PR353)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
10	1	Oct. 1	Oct. 14	350	Limited quota licenses; any antelope
	6	Oct. 1	Nov. 30	500	Limited quota licenses; doe or fawn
16	1	Oct. 1	Oct. 14	500	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 31	400	Limited quota licenses; doe or fawn
Archery		Aug. 15	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
10		No Change
16		No Change
Herd Unit Total		**No Change**

Management Evaluation
Current Postseason Population Management Objective: 2,500
Management Strategy: Recreational
2012 Postseason Population Estimate: ~7,400
2013 Proposed Postseason Population Estimate: ~7,700

Herd Unit Issues

The management objective for the Ucross Pronghorn Herd Unit is a post-season population objective of 2,500 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1996.

Industrial scale oil and gas development and outfitting in the herd unit have resulted in restricted hunting access to some private lands. There are very little public land hunting opportunities in this herd unit. The restricted access has made it difficult to attain adequate harvest in portions of the herd.

Weather

The spring and summer of 2012 was warm and dry, resulting in drought conditions throughout the region. The winter of 2012-13 was generally mild and open until late January, when several winter storms occurred about weekly through February and then again in April. On-going drought conditions do not appear to have negatively affect fawn production.

Habitat

The Petrified Tree habitat transect is located in the south-central portion of this herd unit on BLM land. The habitat transect monitors annual growth and utilization of Wyoming big sagebrush. This transect was not read for several years. Growth was record in the fall 2012 with an average of 12 mm annual production, which confirms drought conditions were prevalent during 2012. This is well below the highest recorded level of 66 mm in 2007.

Field Data

Fawn production, as measured by observed doe:fawn ratios, has exceeded 80 fawns per 100 does during the past two years, suggesting this herd has the potential to increase quickly under favorable conditions. This year, we observed 84 fawns:100 does, higher than the long-term average of 73 fawns:100 does.

Observed buck to doe ratios average about 65 bucks:100 does, well above the desired number of bucks for recreational management. Restricted hunter access to private lands limits our ability to obtain additional buck harvest which is easily sustainable in this herd unit.

Hunter satisfaction has remained high, with 84% of surveyed hunters (n=159) satisfied or very satisfied, suggesting those hunters who do obtain access to private lands experience a quality hunt.

Harvest Data

Since 2007, we have issued 1,750 licenses; 850 Type 1 (any antelope) and 900 Type 6 (doe or fawn). We have not sold out licenses since raising numbers to this level. In 2012, we sold 614 Type 1 licenses (72%) and only 412 Type 6 licenses (46%). This is the most licenses sold in this herd unit in recent history.

In 2012, hunters harvested an estimated 753 pronghorn, the highest harvest ever reported in this herd unit and a 17% increase over the 2011 harvest. Hunters average about 101% success over the past 10 years, compared to 94% success in 2012. License success follows a similar trend (10 year mean = 97%; 2012 = 81%). Hunter effort, as measured by the number of days hunted per animal harvested, was 3.8 days/animal, compared to 3.2 days/animal over the past 10 years. These data suggest that pronghorn have become more difficult to harvest due either to a decrease in access or a decrease in the population. Access has varied over the past 10 years, with changes in ownership of several large ranches influencing hunter access.

Population

The 2012 post-season population estimate of ~7,400 pronghorn is well above the established management objective of 2,500, with the population trending upward. This population likely bottomed out in the late 1990s and has been increasing since then. The last line transect survey was in June 2004, which resulted in an estimated end-of-biological-year population of 5,845 pronghorn.

The “Constant Juvenile – Constant Adult Survival Rate” (CJ,CA) spreadsheet model was chosen to estimate the post-season population for this herd. This model had the lowest relative Akaike

information criterion (AIC) value (93) of the three possible models. The population dynamics of this model appear reasonable and consistent with observed dynamics in the field. Since we have limited data and no independent population estimate for this herd unit, we consider this a "fair" model.

Landowners, hunters and WGFD field personnel have noted an increase in this population over the past several years. Of landowners who responded to an annual survey, 57% (n=13) indicated the population was at or near desired levels and most (76%, n=16) suggested similar season strategies for 2013.

Management Summary

The regular hunting season traditionally runs two weeks (October 1 – 14) for Type 1 licenses, and four weeks (October 1 – 31) for Type 6 licenses since the 2003 season. An archery pre-season generally runs August 15 – September 30. In 2009, the Type 6 season was extended to the end of November in Area 10. Hunters in this herd unit are able to purchase two Type 1 (any antelope) licenses and four Type 6 (doe or fawn antelope) licenses, which allows hunters with access to private lands the opportunity to harvest multiple animals. There is limited pronghorn hunting on scattered State Trust and BLM land, as well as one Walk-In Area and one Hunter Management Area. We observe high buck numbers, as measured by buck:doe ratios, averaging 68 bucks:100 does. This is likely a function of limited access to private lands where the majority of pronghorn occur.

We project a harvest of approximately 700 pronghorn in 2013, resulting in an estimated post-season population of about 7,700 pronghorn. These predictions assume near normal fawn production and survival, as well as similar license sales and success rates for the 2013 hunting season. Due to limited access, we will likely not reach the management objective for this herd unit with hunting alone. The management objective for this herd should be reviewed.

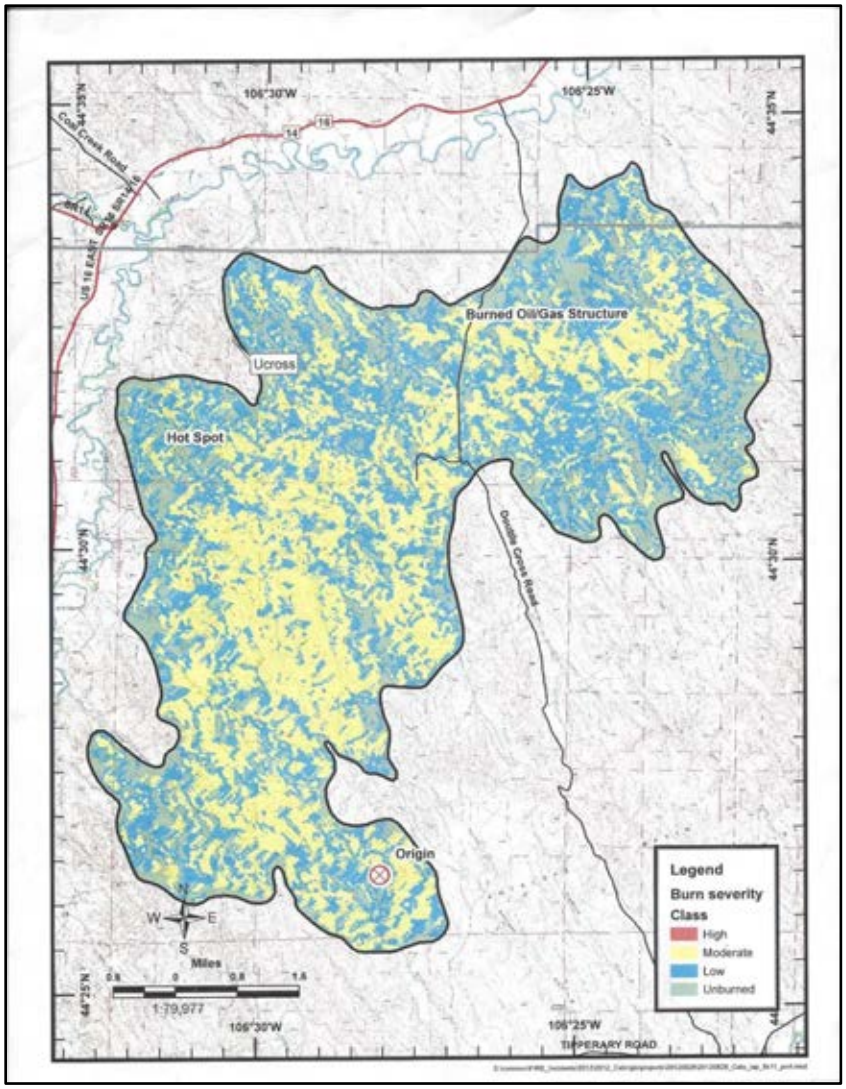
CATO Fire

Extreme drought conditions developed in early summer 2012 which resulted in a June 25th lightning ignited fire about 13 miles northeast of Buffalo in pronghorn Hunt Area 16 and mule deer Hunt Area 26 (Figure 1). The fire burned east of Clear Creek, progressing north and then crossing the Double Cross Road to the east. A total of about 28,000 acres burned including private, state and BLM lands. Most of the burn consisted of sagebrush grassland and mixed-grassland habitats including excellent deer habitat.

The Lake DeSmet Conservation District, Johnson County Weed and Pest District, Bureau of Land Management, Wyoming State lands, Sheridan County Weed and Pest and private landowners cooperated in chemically treating approximately 23,500 acres of the burn minimize the spread of cheatgrass and leafy spurge.

The consortium of agencies is currently working to identify potential areas to reestablish sagebrush to benefit sage-grouse, mule deer, pronghorn and other wildlife.

Figure 1. CATO Fire Burn With Burn Severity.



INPUT	
Species:	Pronghorn
Biologist:	Timothy P. Thomas
Herd Unit & No.:	Ucross PR353
Model date:	02/26/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	84	93	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	84	98	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	62	151	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	940	1417	1796	**4154**	914	1126	1565	**3605**	1266	1653	**2920**	3536	2493		2500
1994	808	1241	1620	**3669**	798	940	1360	**3097**	1063	1430	**2493**				2500
1995	918	1041	1401	**3361**	885	722	1238	**2845**	904	1371	**2275**	2919	1990		2500
1996	870	885	1344	**3099**	859	606	1245	**2710**	803	1381	**2183**	2279	731		2500
1997	748	787	1353	**2888**	744	562	1349	**2654**	731	1442	**2173**	1020	336		2500
1998	1021	716	1413	**3150**	1021	475	1397	**2894**	760	1589	**2349**				2500
1999	1142	745	1557	**3444**	1140	530	1542	**3212**	857	1758	**2614**	2533	350		2500
2000	1377	840	1722	**3939**	1377	641	1706	**3724**	1045	1990	**3035**				2500
2001	1109	1024	1950	**4084**	1107	864	1934	**3904**	1139	2082	**3221**	2814	662		2500
2002	1628	1117	2040	**4785**	1628	897	2031	**4556**	1358	2367	**3724**	3763	752		2500
2003	1836	1331	2319	**5486**	1833	1083	2257	**5173**	1592	2629	**4221**				2500
2004	1940	1560	2577	**6076**	1929	1301	2512	**5742**	1813	2884	**4697**	5845	899		2500
2005	2389	1777	2826	**6992**	2364	1458	2763	**6584**	2102	3264	**5366**				2500
2006	2772	2060	3199	**8031**	2723	1597	2971	**7291**	2332	3551	**5884**				2500
2007	2191	2286	3480	**7957**	2173	1780	3233	**7186**	2277	3566	**5843**				2500
2008	2172	2231	3495	**7899**	2159	1676	3198	**7033**	2174	3524	**5698**				2500
2009	1737	2131	3453	**7321**	1730	1745	3172	**6647**	2098	3341	**5438**				2500
2010	1819	2056	3274	**7148**	1799	1587	3030	**6416**	1974	3249	**5223**				2500
2011	2572	1934	3184	**7691**	2543	1500	2942	**6985**	2131	3409	**5539**				2500
2012	2794	2088	3341	**8222**	2775	1583	3036	**7394**	2380	3658	**6038**				2500
2013	2509	2333	3585	**8427**	2487	1860	3310	**7657**							2500
2014															
2015															
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2017															
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2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.75			0.84		
1994	0.75			0.84		
1995	0.75			0.84		
1996	0.75			0.84		
1997	0.75			0.84		
1998	0.75			0.84		
1999	0.75			0.84		
2000	0.75			0.84		
2001	0.75			0.84		
2002	0.75			0.84		
2003	0.75			0.84		
2004	0.75			0.84		
2005	0.75			0.84		
2006	0.75			0.84		
2007	0.75			0.84		
2008	0.75			0.84		
2009	0.75			0.84		
2010	0.75			0.84		
2011	0.75			0.84		
2012	0.75			0.84		
2013	0.75			0.84		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.750
Adult Survival =	0.842
Initial Total Male Pop/10,000 =	0.142
Initial Female Pop/10,000 =	0.180

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juv	Total Harvest	Total Males	Females
1993		52.36	4.23	78.91	78.43	5.61	265	210	24	499	20.6	12.9
1994		49.85	4.69	76.59	77.29	6.36	274	237	9	520	24.3	16.1
1995		65.50	6.48	74.31	68.22	6.67	290	149	30	469	30.6	11.7
1996		64.74	5.18	65.90	77.33	5.88	254	90	10	354	31.6	7.4
1997		55.28	5.50	58.15	51.06	5.21	204	4	4	212	28.5	0.3
1998		72.28	6.41	50.69	62.71	5.80	219	14	0	233	33.6	1.1
1999		73.33	5.82	47.85	41.33	3.95	195	14	2	211	28.8	1.0
2000		79.95	5.86	48.75	58.95	4.73	181	15	0	196	23.7	1.0
2001		56.89	4.16	52.53	41.94	3.40	146	15	2	163	15.7	0.8
2002		79.81	5.84	54.74	56.53	4.58	200	8	0	208	19.7	0.4
2003		79.18	5.52	57.37	67.81	4.94	225	57	3	285	18.6	2.7
2004		75.28	4.02	60.53	57.65	3.34	235	59	10	304	16.6	2.5
2005		84.53	4.26	62.86	74.53	3.89	290	58	23	371	18.0	2.3
2006		86.65	5.44	64.39	87.75	5.49	421	207	45	673	22.5	7.1
2007		62.95	4.01	65.68	75.51	4.56	460	225	16	701	22.1	7.1
2008		62.15	3.28	63.84	63.22	3.32	505	270	12	787	24.9	8.5
2009		50.30	3.87	61.70	62.77	4.50	351	256	6	613	18.1	8.2
2010		55.56	3.79	62.80	61.36	4.05	426	222	18	666	22.8	7.5
2011		80.79	6.00	60.75	50.99	4.35	395	220	27	642	22.5	7.6
2012		83.63	5.87	62.51	61.88	4.74	459	277	17	753	24.2	9.1
2013		70.00	4.88	65.07	60.00	4.38	430	250	20	700	20.3	7.7
2014												
2015												
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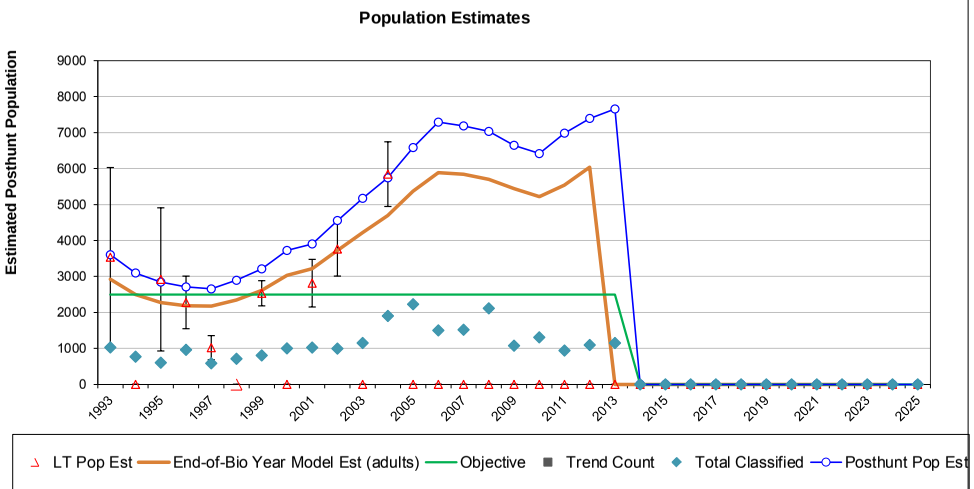
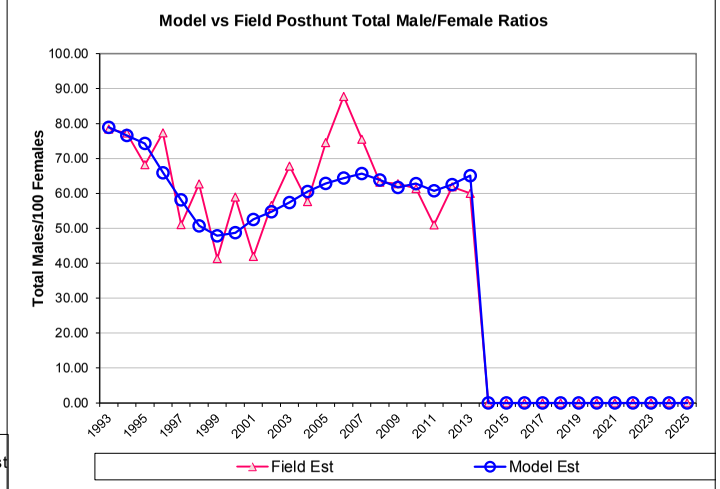
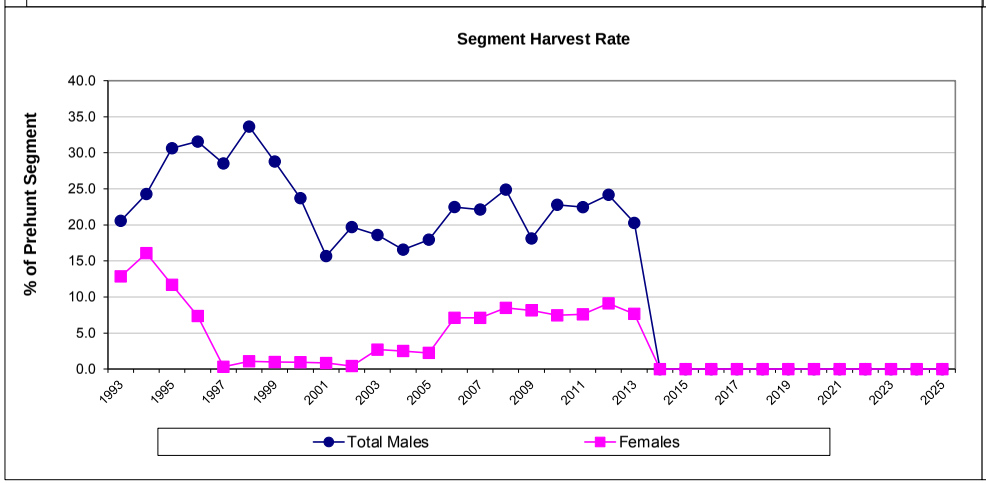
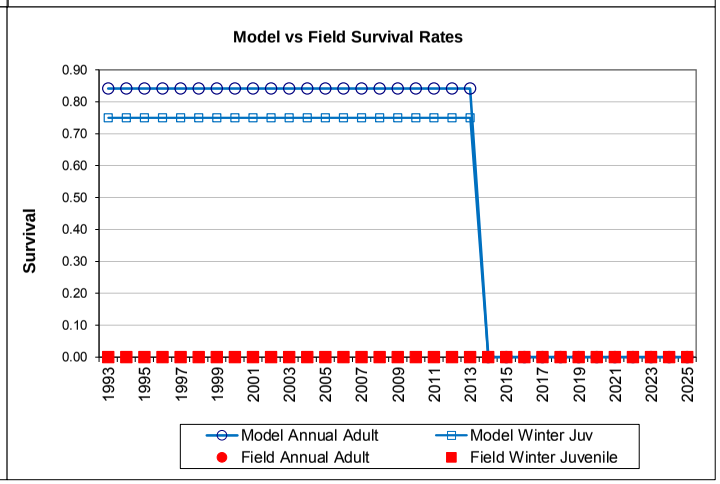
2024												
2025												

FIGURES









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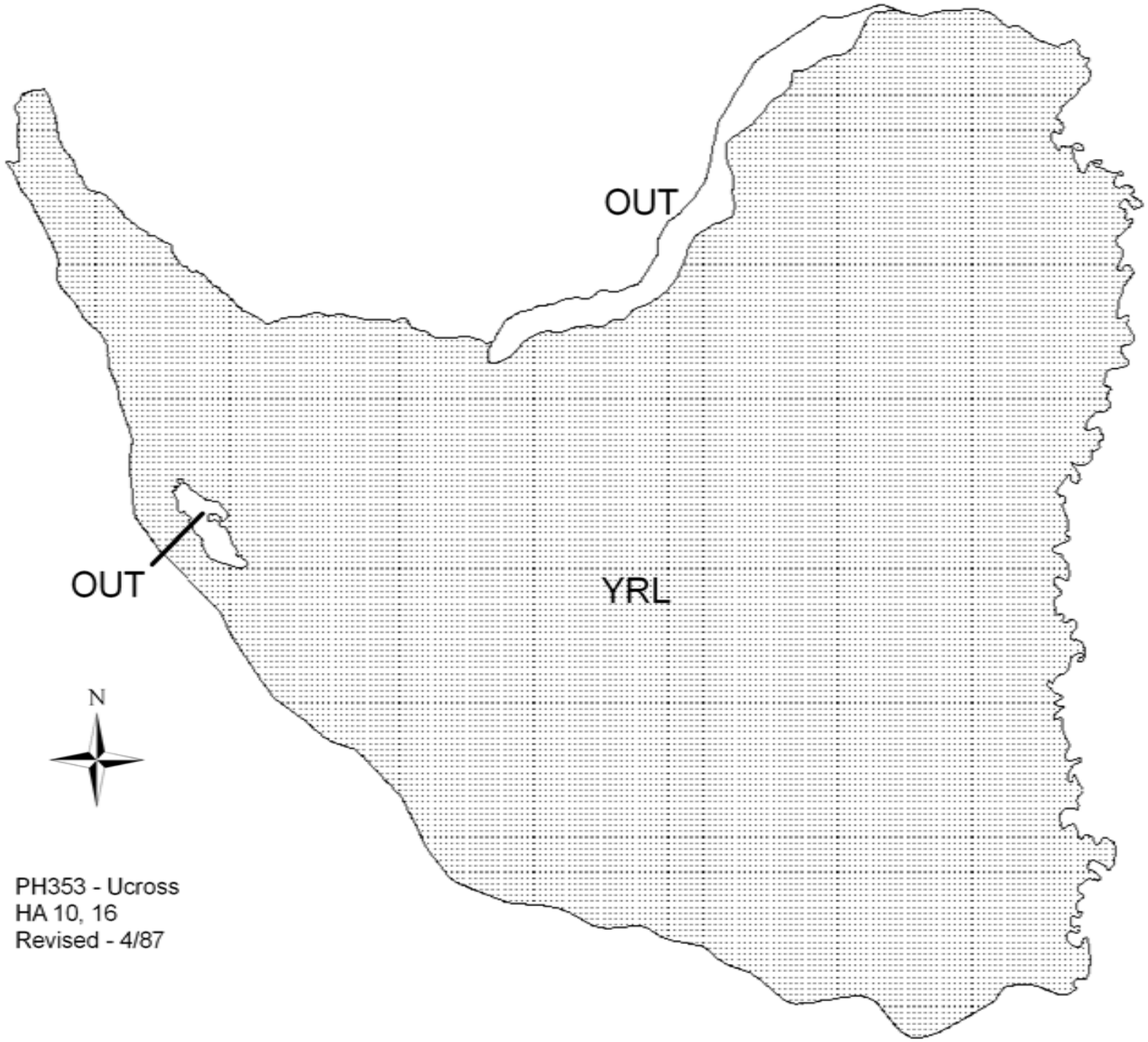
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Revised - 4/87

2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR354 - BUFFALO

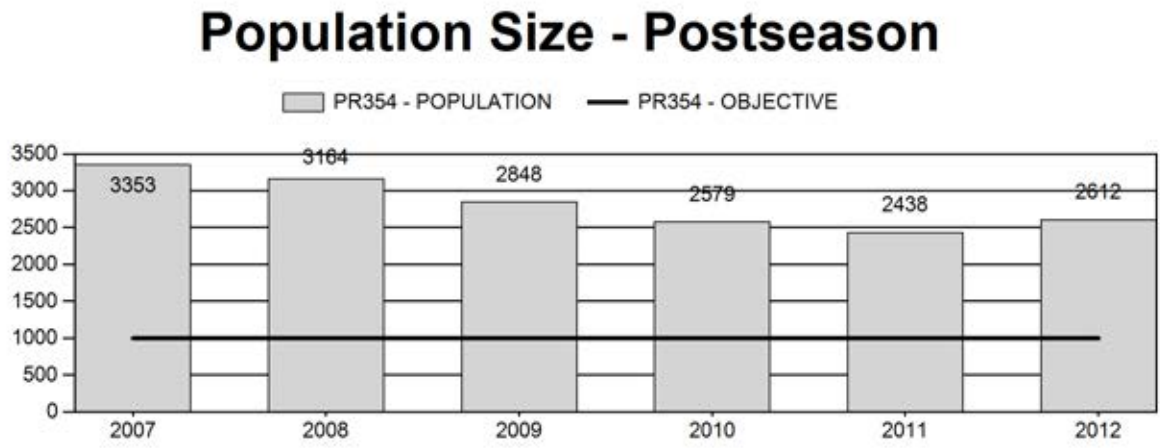
HUNT AREAS: 102
PREPARED BY: DAN THIELE

	2007 - 2011 Average	2012	2013 Proposed
Population:	2,876	2,612	2,324
Harvest:	547	456	520
Hunters:	584	560	600
Hunter Success:	94%	81%	87%
Active Licenses:	654	634	700
Active License Percent:	84%	72%	74%
Recreation Days:	2,188	2,110	2,300
Days Per Animal:	4	4.6	4.4
Males per 100 Females	61	76	
Juveniles per 100 Females	79	108	

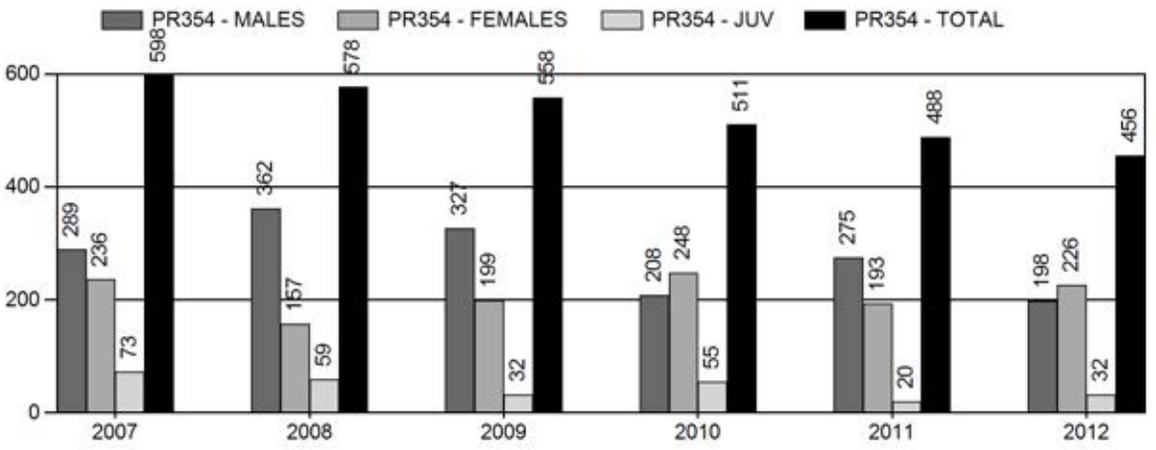
Population Objective:	1,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	161%
Number of years population has been + or - objective in recent trend:	10
Model Date:	5/23/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

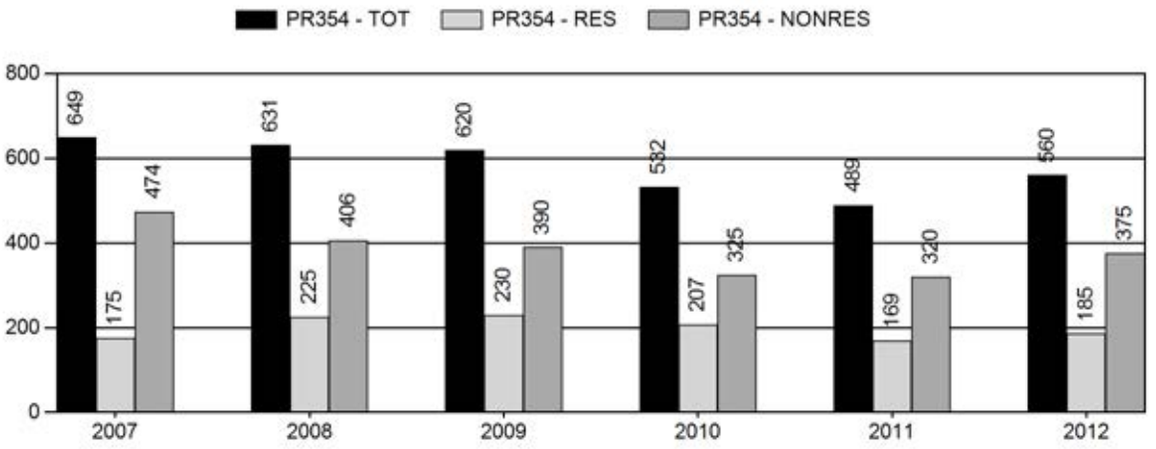
	JCR Year	Proposed
Females ≥ 1 year old:	20%	20%
Males ≥ 1 year old:	30%	39%
Juveniles (< 1 year old):	4%	0%
Total:	18%	-11%
Proposed change in post-season population:	-4%	-11%



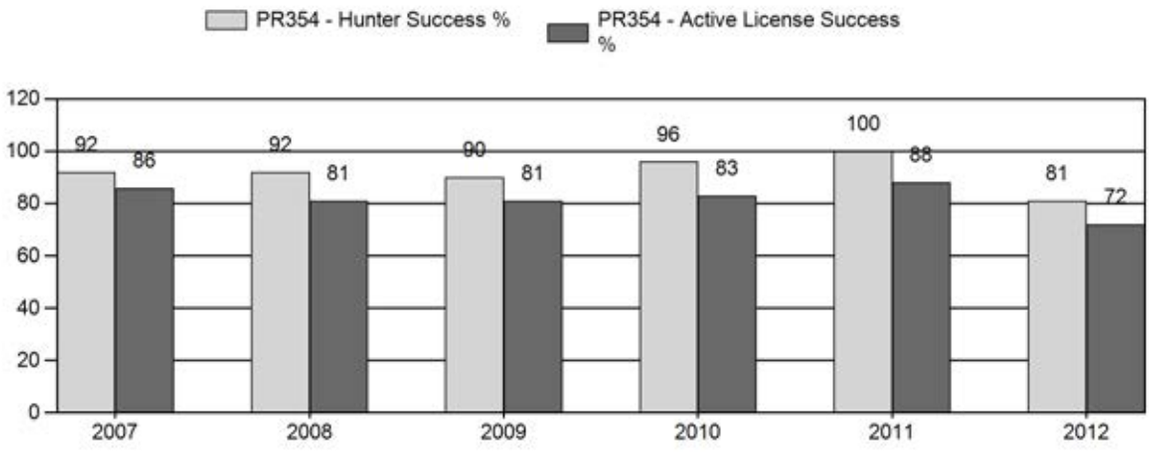
Harvest



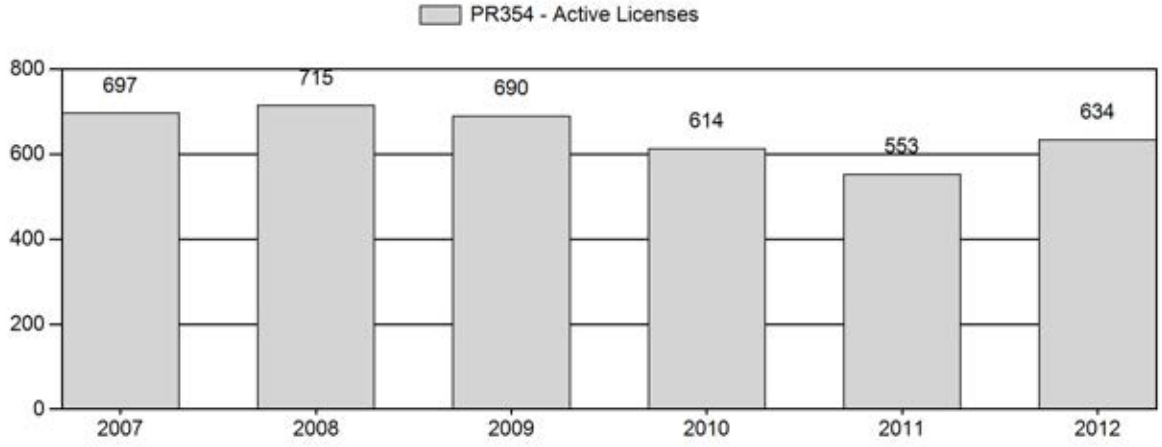
Number of Hunters



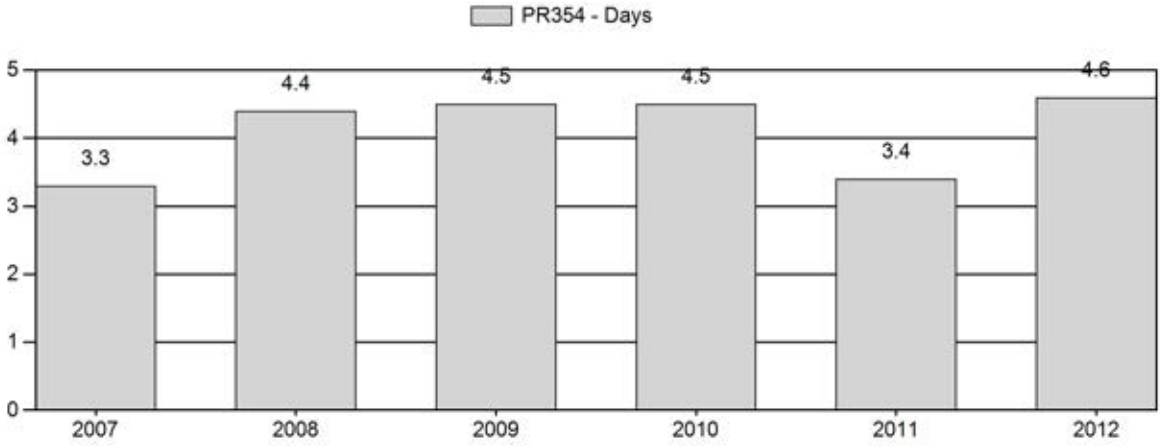
Harvest Success



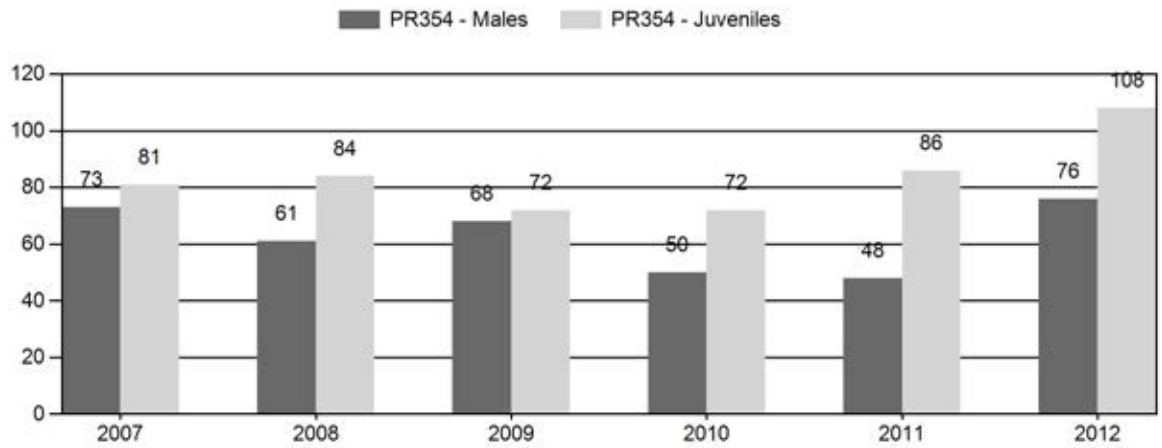
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR354 - BUFFALO

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	4,011	99	171	270	29%	368	39%	299	32%	937	1,724	27	46	73	± 8	81	± 9	47
2008	3,800	56	101	157	25%	259	41%	218	34%	634	2,342	22	39	61	± 9	84	± 12	52
2009	3,462	48	121	169	28%	248	42%	178	30%	595	1,906	19	49	68	± 10	72	± 11	43
2010	3,141	35	100	135	23%	268	45%	192	32%	595	1,707	13	37	50	± 8	72	± 10	48
2011	2,975	41	80	121	20%	253	43%	217	37%	591	2,092	16	32	48	± 8	86	± 12	58
2012	3,114	122	212	334	27%	441	35%	476	38%	1,251	2,147	28	48	76	± 7	108	± 9	61

2013 HUNTING SEASONS
BUFFALO PRONGHORN HERD (PR354)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
102	1	Oct. 15	Nov. 15	550	Limited quota licenses; any antelope
	6	Sep. 1	Sep. 30	500	Limited quota licenses; doe or fawn valid on private land
		Oct. 15	Nov. 15		Unused Area 102 licenses valid for the entire area
Archery		Aug. 15	Oct. 14		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
102		No change
Herd Unit Total		**No change**

Management Evaluation
Current Postseason Population Management Objective: 1,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~2,600
2013 Proposed Postseason Population Estimate: ~2,300

Herd Unit Issues

The Buffalo Pronghorn Herd Unit post-season population objective is 1,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1988 but are being reviewed this spring.

This small herd unit consists of 160 mi^2 of occupied habitat and is predominately private land with limited areas of accessible public land. The population is characterized by high densities of pronghorn with high fawn ratios and high buck ratios. Although buck ratios have exceed the special management threshold, this herd is designated for recreational management. This population is somewhat immune from effects of drought because of the occurrence of irrigated meadows throughout much of the hunt area. Complaints of crop depredation are common. Subdivisions combined with outfitted hunting contribute to restrictive hunter access. Access largely determines the number of licenses sold.

Weather

Weather in the area of the Buffalo Herd Unit turned extremely warm and dry beginning in June 2012 after several good moisture years. The Palmer drought index for Climate Division 5 (Powder, Little Missouri and Tongue drainages) showed "very moist" conditions for January 2012 but progressed to "extreme drought" by January 2013. The National Weather Service in Sheridan reported 2012 as the driest year since 1960 and the 4th driest year in 105 years with 9.53 inches of precipitation (14.16" ave). It was also the 6th warmest year on record with an average

temperature of 48.1° F, the warmest year since 2006. With the late onset of drought, fawn production was not affected.

Habitat

There are no habitat transects in this herd unit. However, in the adjacent Crazy Woman Pronghorn Herd Unit winter utilization of a Wyoming big sagebrush transect during the 2011-12 winter was very light (less than 5% of leaders browsed) as pronghorn were dispersed over winter/yearlong range. Production measured in September 2012 averaged 12 mm per leader compared to 30 mm per leader in 2011. Range conditions are not readily comparable between the two herd units as the Buffalo herd unit has more irrigated cropland and a mix of silver and big sagebrush.

Field Data

Data collection has been limited to preseason classifications, field checks and a postseason landowner survey. No line transect or trend count surveys have been conducted since 2003. Fawn ratios have trended up the last two years reaching a six year high in 2012 (108:100). Lower fawn ratios in 2009 and 2010 dampened herd growth. Landowners surveyed following the hunting season indicated that most (73%) were satisfied with pronghorn numbers while the remaining 27% thought numbers were too high. Past surveys show that most landowners are tolerant of very high pronghorn densities. Raising the objective would more accurately reflect the actual population, but would have little effect on management. The hunter satisfaction survey showed 87% of hunters in 2012 were either satisfied or very satisfied with their hunt.

Harvest Data

Total harvest decreased 24% since 2007 as hunter numbers and active license numbers decreased. Active license success decreased to a six year low (81%) while hunter effort increased to a six year high. Private land access is essential to achieving harvest objectives. License quotas are currently at the highest levels ever, yet harvest remains 30% below that of the early 1990's when 650 pronghorn were harvested.

Population

This herd has a 2012 post-season population estimate of 2,600 pronghorn, more than double the population objective. The population estimate was generated with the newly adopted EXCEL spreadsheet model. The constant juvenile/constant adult (CJ/CA) option was chosen even though it produced a higher AIC value (99) as it generated a more realistic population estimate. Modeling efforts are complicated by widely varying buck:doe ratios in some years caused by inadequate classification samples. Even so, the model is considered a fair model and is believed to provide a reasonable representation of this herd's population dynamics. The population currently exceeds the objective of 1,000 pronghorn based on harvest and classification samples. No independent end-of-year population estimate has been available to align the model for more than 10 years.

The model suggests a decreasing population through 2011 followed by a slight increase in 2012 due to the high fawn ratio. Harvest, hunter numbers and hunter success reflect this trend. Likewise, the landowner survey indicates a higher acceptance of current pronghorn numbers than in recent years. There remains some question as to the accuracy of the model estimate but the trend seems reasonable, suggesting an average annual decrease of 7% from 2007 thru 2011.

Management Summary

The 2013 hunting season includes continuation of the September Type 6 season to address landowner concerns with depredation to irrigated hay meadows. This season corresponds to a doe/fawn white-tailed deer season because landowners deal with high numbers of both species. Harvest objectives will likely not be attained as some licenses go unsold. In 2012, 63% of Type 1 licenses sold (201 unsold) and 76% of Type 6 licenses sold (118 unsold). License quotas were more than adequate to address depredation concerns if hunter access was available.

A harvest of 520 pronghorn is projected for the 2013 hunting season if access improves and hunter success increases. In reality, harvest is expected to be similar to 2012 as there is no reason to expect license sales to increase significantly. A postseason population objective of 2,300 pronghorn is expected.

INPUT	
Species:	Pronghorn
Biologist:	Dan Thiele
Herd Unit & No.:	Buffalo (354)
Model date:	05/23/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	90	99	☑ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	64	73	☐ SCJ,SCA	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	56	167	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	1102	1307	1650	**4058**	1069	927	1366	**3362**	1106	1490	**2596**	1356	662		1000
1994	847	1084	1460	**3391**	806	766	1153	**2726**	883	1207	**2089**				1000
1995	1055	865	1183	**3103**	987	584	919	**2490**	804	1085	**1889**	1094	531		1000
1996	987	788	1064	**2838**	974	494	925	**2393**	728	1116	**1844**				1000
1997	831	713	1094	**2637**	831	422	1044	**2296**	615	1179	**1793**				1000
1998	775	602	1155	**2532**	775	337	1140	**2252**	528	1244	**1772**				1000
1999	889	517	1219	**2625**	880	322	1176	**2377**	567	1307	**1874**				1000
2000	1139	556	1281	**2976**	1125	371	1216	**2712**	703	1430	**2133**				1000
2001	1151	689	1402	**3241**	1136	513	1293	**2942**	828	1490	**2318**				1000
2002	1393	811	1460	**3664**	1369	572	1317	**3259**	953	1592	**2546**				1000
2003	1434	934	1560	**3928**	1396	668	1383	**3448**	1037	1649	**2686**				1000
2004	1429	1016	1616	**4061**	1383	719	1401	**3503**	1067	1651	**2718**				1000
2005	1437	1046	1618	**4100**	1421	738	1379	**3538**	1099	1646	**2746**				1000
2006	1449	1077	1613	**4140**	1422	757	1378	**3557**	1112	1645	**2757**				1000
2007	1310	1089	1612	**4011**	1229	772	1352	**3353**	1044	1539	**2583**				1000
2008	1269	1023	1508	**3800**	1204	625	1335	**3164**	899	1533	**2432**				1000
2009	1078	881	1502	**3462**	1043	521	1284	**2848**	762	1424	**2185**				1000
2010	999	746	1395	**3141**	939	518	1122	**2579**	740	1236	**1976**				1000
2011	1039	725	1211	**2975**	1017	423	999	**2438**	780	1153	**1933**				1000
2012	1220	764	1130	**3114**	1185	546	881	**2612**	795	1178	**1973**				1000
2013	962	779	1155	**2896**	918	477	929	**2324**							1000
2014															1000
2015															1000
2016															1000
2017															1000
2018															1000
2019															1000
2020															1000
2021															1000
2022															1000
2023															1000
2024															1000
2025															1000

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.75			0.82		
1994	0.75			0.82		
1995	0.75			0.82		
1996	0.75			0.82		
1997	0.75			0.82		
1998	0.75			0.82		
1999	0.75			0.82		
2000	0.75			0.82		
2001	0.75			0.82		
2002	0.75			0.82		
2003	0.75			0.82		
2004	0.75			0.82		
2005	0.75			0.82		
2006	0.75			0.82		
2007	0.75			0.82		
2008	0.75			0.82		
2009	0.75			0.82		
2010	0.75			0.82		
2011	0.75			0.82		
2012	0.75			0.82		
2013	0.75			0.82		
2014						
2015						
2016						
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2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.750
Adult Survival =	0.817
Initial Total Male Pop/10,000 =	0.131
Initial Female Pop/10,000 =	0.165

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		66.78	6.11	79.21	91.61	7.67	345	258	30	633	29.0	17.2
1994		57.98	5.46	74.27	65.15	5.92	289	279	37	605	29.3	21.0
1995		89.24	8.70	73.12	61.88	6.70	255	240	62	557	32.4	22.3
1996		92.79	7.66	74.04	82.30	7.01	267	126	12	405	37.3	13.0
1997		75.95	9.20	65.20	81.01	9.63	265	45	0	310	40.9	4.5
1998		67.07	5.85	52.14	60.37	5.43	241	14	0	255	44.0	1.3
1999		72.92	8.10	42.46	72.92	8.10	178	39	8	225	37.8	3.5
2000		88.89	7.64	43.37	29.86	3.67	168	59	13	240	33.3	5.1
2001		82.11	7.24	49.16	57.19	5.62	160	99	13	272	25.5	7.8
2002		95.37	6.92	55.55	46.79	4.20	217	130	21	368	29.4	9.8
2003		91.89	6.90	59.89	57.84	4.97	242	161	34	437	28.5	11.4
2004		88.39	8.62	62.86	66.52	7.03	270	196	41	507	29.2	13.3
2005		88.82	5.95	64.66	93.04	6.16	280	217	14	511	29.4	14.8
2006		89.82	5.57	66.77	74.00	4.84	291	214	25	530	29.7	14.6
2007		81.25	6.33	67.58	73.37	5.88	289	236	73	598	29.2	16.1
2008		84.17	7.74	67.83	60.62	6.13	362	157	59	578	38.9	11.5
2009		71.77	7.05	58.62	68.15	6.80	327	199	32	558	40.8	14.6
2010		71.64	6.77	53.51	50.37	5.32	208	248	55	511	30.7	19.6
2011		85.77	7.94	59.89	47.83	5.29	275	193	20	488	41.7	17.5
2012		107.94	7.13	67.62	75.74	5.49	198	226	32	456	28.5	22.0
2013		83.33	7.14	67.46	60.00	5.66	275	205	40	520	38.8	19.5
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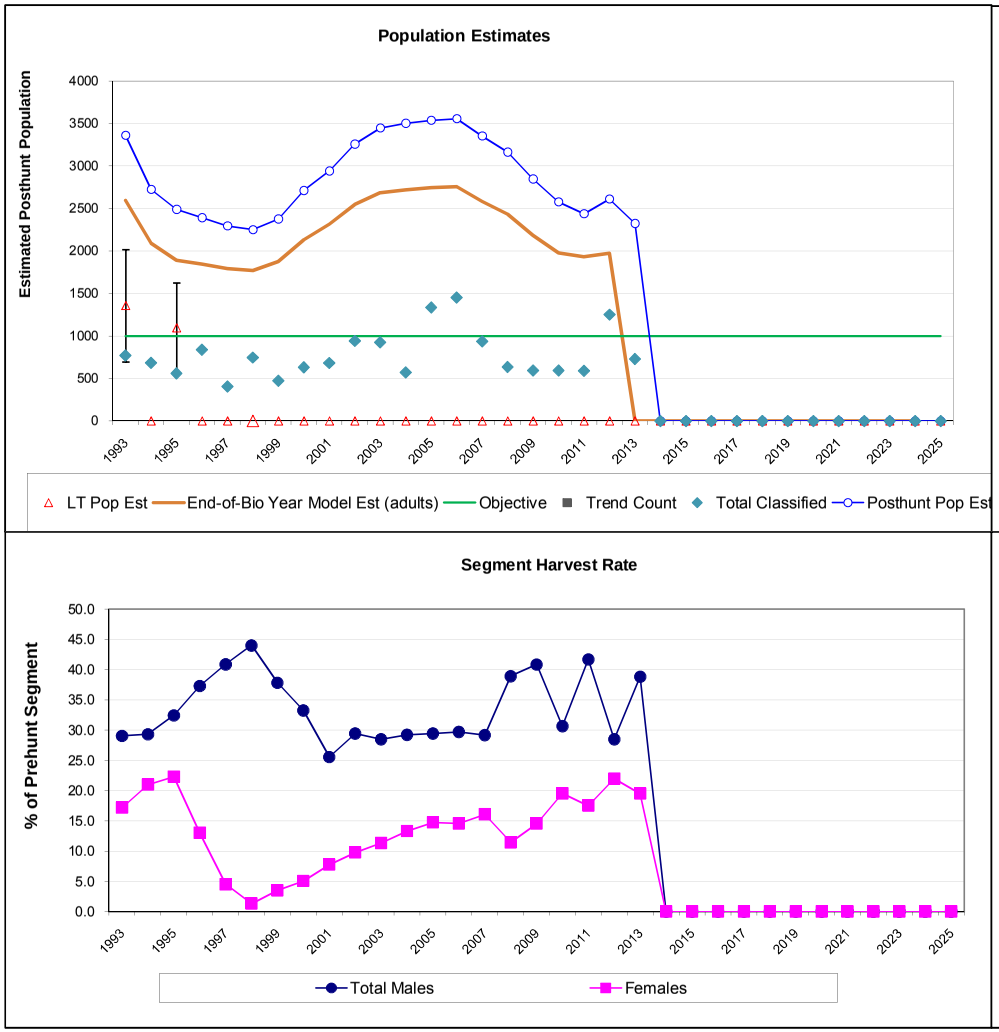
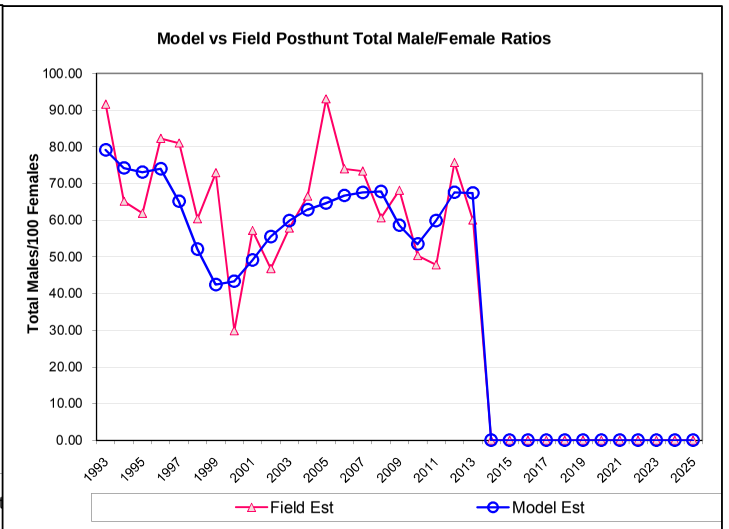
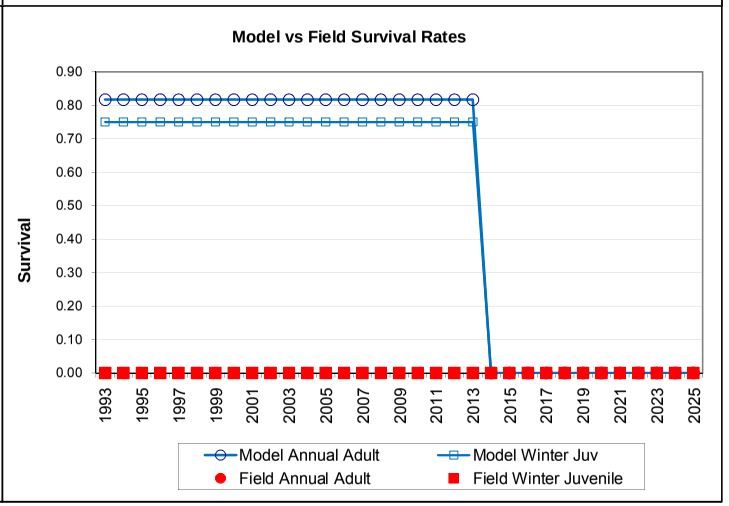
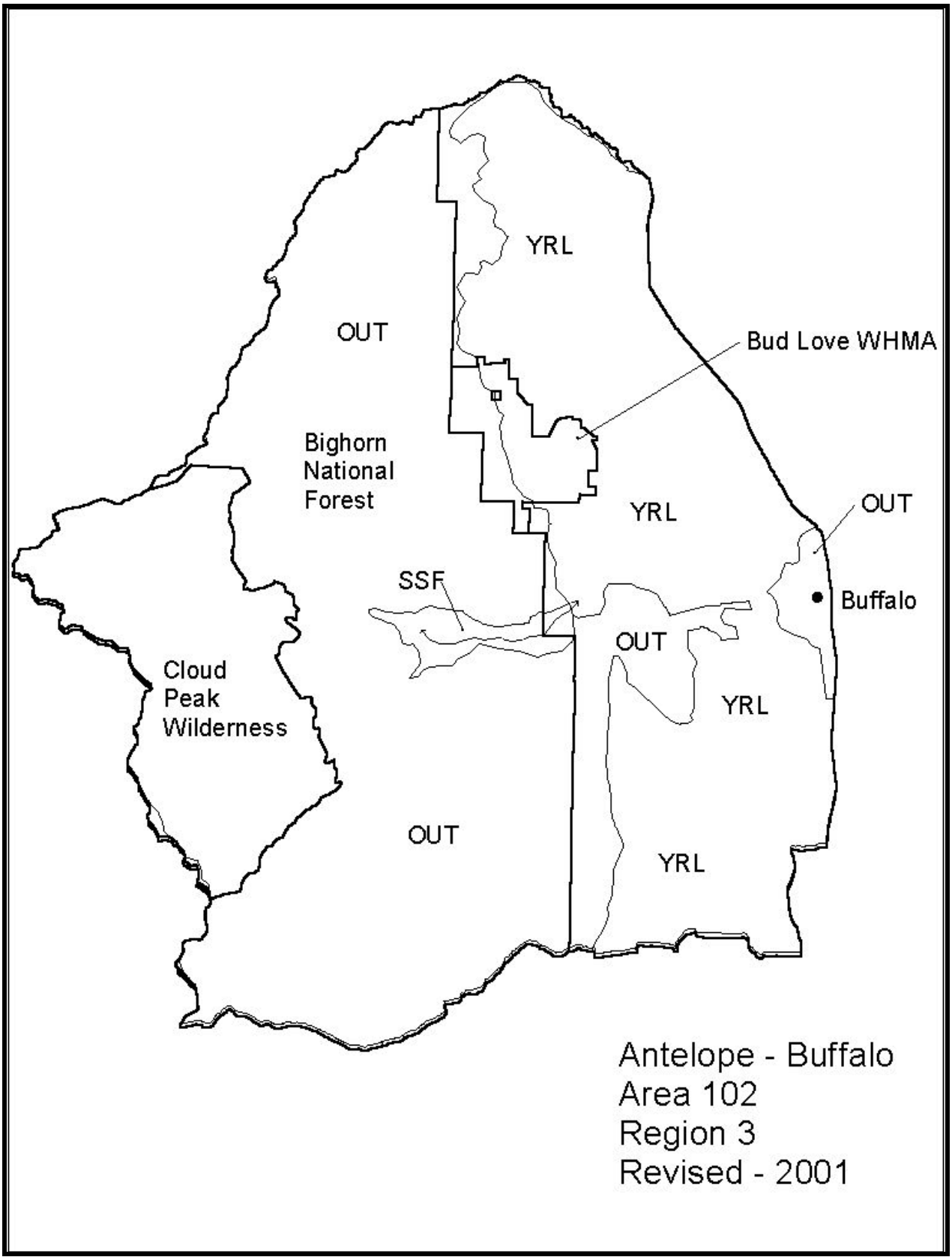
FIGURES







Comments: SCJ, SCA model produces lowerAIC value but has unreasonably low juvenile survival rates in many years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Bud Love WHMA
Bighorn
National
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OUT
Cloud
Peak
Wilderness
YRL
OUT
YRL
Antelope - Buffalo
Area 102
Region 3
Revised - 2001

2012 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2012 - 5/31/2013

HERD: PR355 - BECKTON

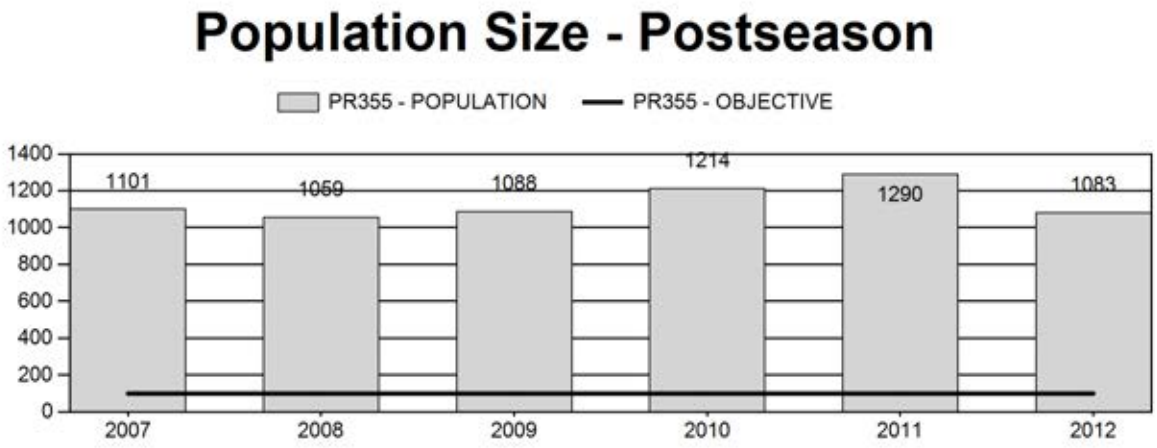
HUNT AREAS: 109
PREPARED BY: TIM THOMAS

	2007 - 2011 Average	2012	2013 Proposed
Population:	1,150	1,083	1,040
Harvest:	231	314	265
Hunters:	272	351	300
Hunter Success:	85%	89%	88%
Active Licenses:	323	403	350
Active License Percent:	72%	78%	76%
Recreation Days:	1,094	1,453	1,250
Days Per Animal:	4.7	4.6	4.7
Males per 100 Females	44	36	
Juveniles per 100 Females	51	41	

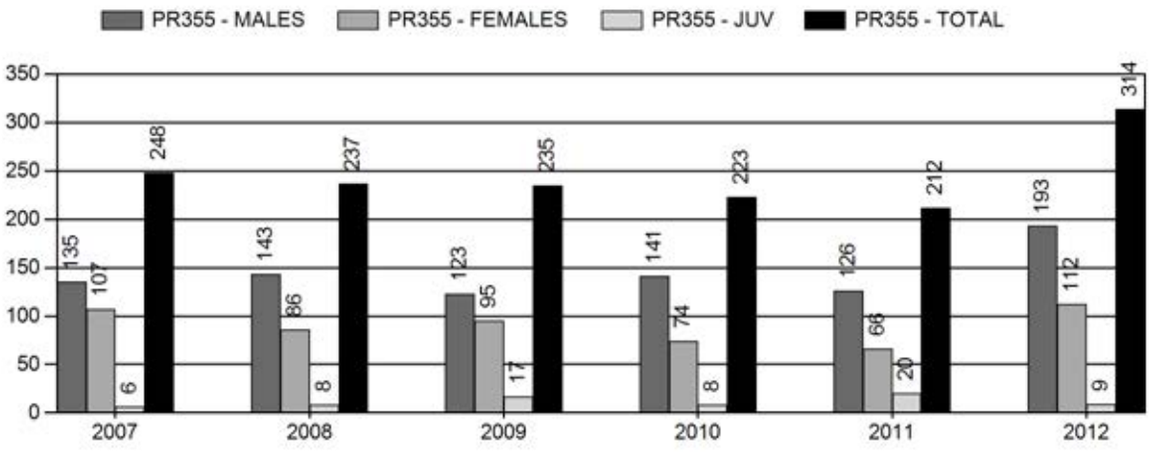
Population Objective:	100
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	983%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/28/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

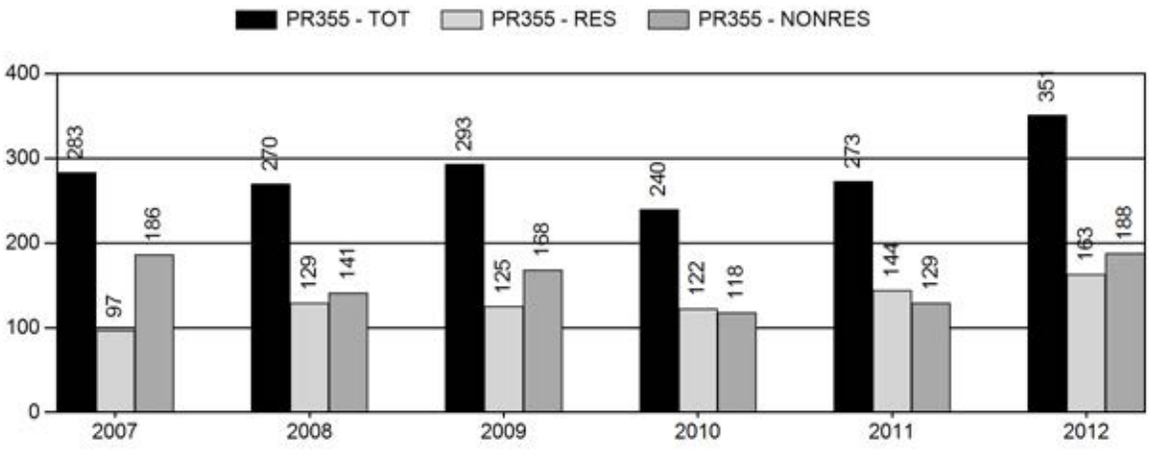
	JCR Year	Proposed
Females ≥ 1 year old:	15%	14%
Males ≥ 1 year old:	77%	83%
Juveniles (< 1 year old):	2%	2%
Total:	22%	19%
Proposed change in post-season population:	-1%	-1%



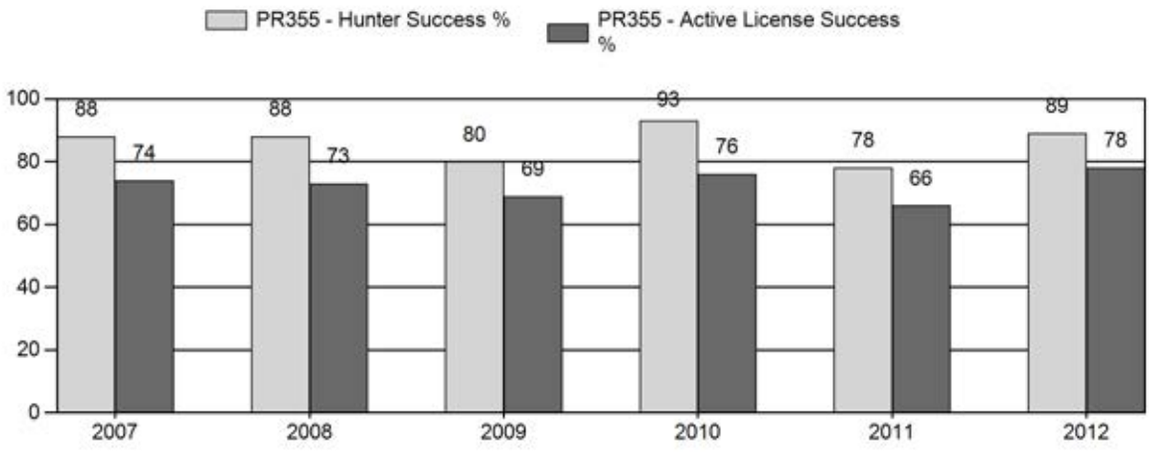
Harvest



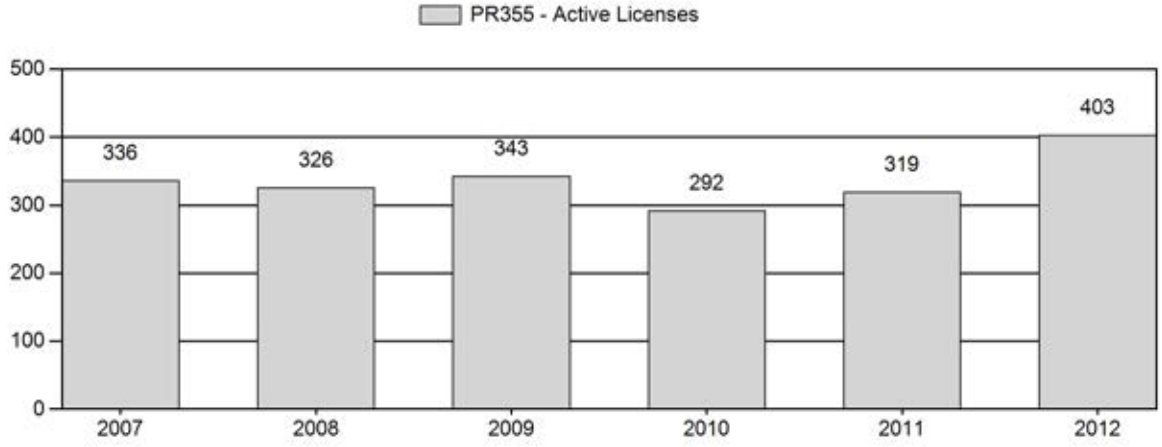
Number of Hunters



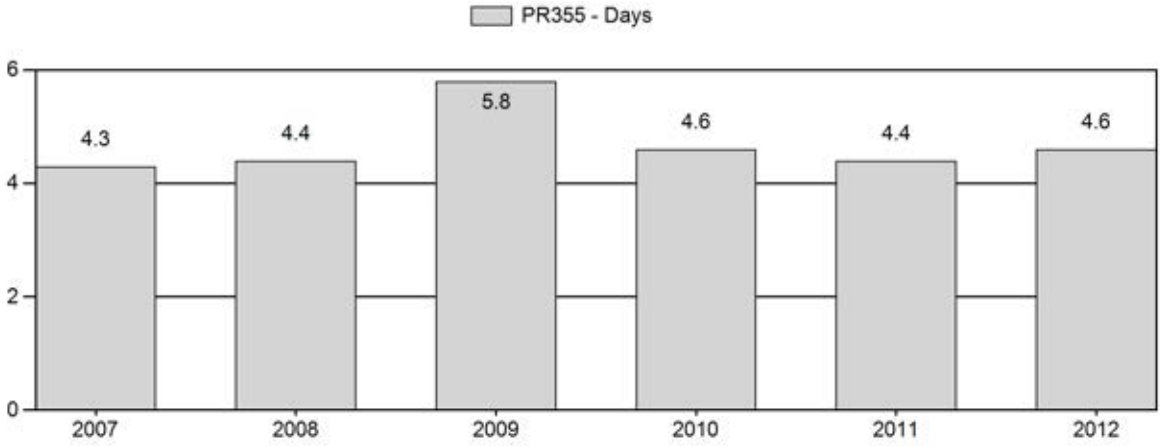
Harvest Success



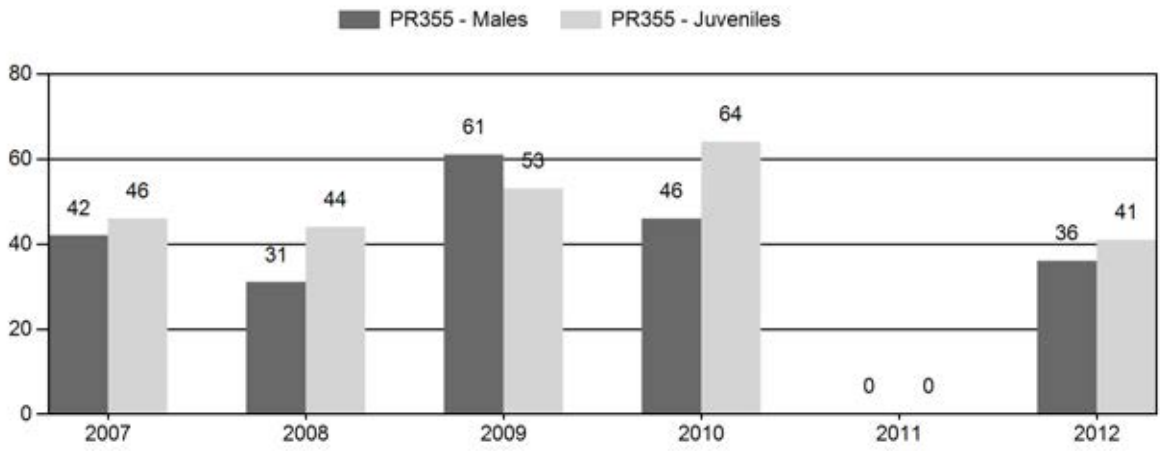
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR355 - BECKTON

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	1,374	5	25	30	22%	72	53%	33	24%	135	559	7	35	42	± 14	46	± 15	32
2008	1,320	14	29	43	18%	139	57%	61	25%	243	665	10	21	31	± 8	44	± 10	34
2009	1,346	24	47	71	28%	117	47%	62	25%	250	929	21	40	61	± 14	53	± 12	33
2010	1,459	12	32	44	22%	95	48%	61	30%	200	969	13	34	46	± 13	64	± 16	44
2011	1,523	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	1,428	18	34	52	20%	145	56%	60	23%	257	0	12	23	36	± 9	41	± 9	30

2013 HUNTING SEASONS
BECKTON PRONGHORN HERD (PR355)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
109	1	Sep. 15	Nov. 30	300	Limited quota licenses; any antelope
	6	Sep. 15	Nov. 30	300	Limited quota licenses; doe or fawn
Archery		Aug. 15	Sep. 14		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
109		No Change
Herd Unit Total		**No Change**

Management Evaluation
Current Postseason Population Management Objective: 100
Management Strategy: Recreational
2012 Postseason Population Estimate: ~1,100
2013 Proposed Postseason Population Estimate: ~1,000

Herd Unit Issues

The management objective for the Beckton Pronghorn Herd Unit is a post-season population objective of 100 pronghorn. The management strategy is recreational management. The objective and management strategy were last revised in 1996.

There are little public land hunting opportunities available in this herd unit. The restricted access has made it difficult to attain adequate harvest in portions of this herd.

Weather

The spring and summer of 2012 was warm and dry, resulting in drought conditions throughout the region. The winter of 2012-13 was generally mild and open until late January, when several winter storms occurred weekly through February, and again in April. The on-going drought conditions appear to have negatively affected fawn production in this herd unit.

Habitat

There are no habitat transects within or near this herd unit. This herd unit contains open rangeland dominated by short-grass prairie and big sage brush, dry land and irrigated crop lands, and numerous rural subdivisions.

Field Data

Fawn production, as measured by the observed doe:fawn ratios, has exceeded 60 fawns per 100 does only once in the past 10 years, suggesting this herd is not likely to grow quickly, even with limited harvest. In 2012, we observed 41 fawns:100 does, below the level of production considered sufficient to maintain a population.

We observed 36 bucks:100 does in 2012. The observed buck to doe ratio can be highly variable between years in this herd unit. We have sufficient bucks to maintain the limited harvest we do obtain in this herd unit.

Hunter satisfaction has remained high, with 86% of surveyed hunters (n=58) satisfied or very satisfied.

Harvest Data

Since 2006, we have issued 600 licenses; 300 Type 1 (any antelope) and 300 Type 6 (doe or fawn). We have not sold all allocated licenses since 2005. In 2012, we sold 272 Type 1 licenses (91%) and 182 Type 6 licenses (61%). This is the most licenses ever sold in this herd unit.

Harvest increased 48% in 2012 compared to 2011, to an estimated 314 pronghorn, the highest harvest ever recorded in this herd unit. Hunters average about 86% success over the past 10 years, compared to 89% success in 2012. License success follows a similar trend (10 year mean = 74%; 2012 = 78%). Hunter effort, as measured by the number of days hunted per animal harvested, was 4.6 days/animal, the same as the past 10 years. These data suggest a relatively stable population.

Population

The 2012 post-season population estimate is well above the established management objective, at about 1,100 with the population likely stable. This management objective is unrealistic and needs to be revised during the next herd unit review. Due to this herd's small size, both in population and geographically, we have never flown a line transect survey. A trend count was last conducted in May 1999, when 382 pronghorn were counted and resulted in an estimated 1,500 pronghorn (25% sightability estimated).

The "Time-Specific Juvenile – Constant Adult Survival Rate" (TSJ,CA) spreadsheet model was chosen to estimate the post-season population for this herd. Even though this model had the highest relative Akaike information criterion (AIC) value (142) of the three possible models, it appeared to be the most realistic in modeling the perceived population dynamics of this herd. Since we have limited management data, small sample size and no independent population for this herd unit, we consider this a "poor" population model

Landowners, hunters and WGFD field personnel have not seen any significant increase or decrease in this herd unit in recent years. Landowners who responded (n = 22) to an annual survey indicated pronghorn populations where at (73%) or above (27%) desired levels, similar to others years; and suggested similar hunting season strategies as in recent years.

Management Summary

The regular hunting season in this herd unit traditionally runs 10 weeks (September 15 – November 30) for both Type 1 and Type 6 licenses, with an archery pre-season August 15 – September 14. Hunters in this herd unit are able to purchase two Type 1 (any antelope) licenses and four Type 6 (doe or fawn antelope) licenses, which allows hunters with access to private lands the opportunity to harvest multiple animals. There is limited pronghorn hunting on scattered State Trust Lands, as well as three Walk-In Areas and one Hunter Management Area. We observe high buck numbers, as measured by buck:doe ratios, averaging 43 bucks:100 does over the long-term (n=28 years). This is likely a function of limited access to private lands where the majority of pronghorn occur.

We project a harvest of approximately 265 pronghorn in 2013, resulting in an estimated post-season population of about 1,000 pronghorn. These predictions assume near normal fawn production and survival, as well as similar license sales and success rates for the 2013 hunting season. Due to limited access, we will likely not reach the management objective for this herd unit with hunting alone. The management objective should be reviewed in the near future.

INPUT	
Species:	Pronghorn
Biologist:	Timothy P. Thomas
Herd Unit & No.:	Beckton PR 355
Model date:	02/28/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	94	103	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	100	114	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	45	142	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	260	254	905	**1420**	251	188	878	**1318**	228	898	**1126**				100
1994	629	223	880	**1732**	614	163	797	**1574**	276	889	**1165**				100
1995	526	270	871	**1667**	516	213	782	**1511**	306	856	**1162**				100
1996	652	300	839	**1791**	644	238	733	**1615**	356	834	**1190**				100
1997	300	349	817	**1467**	290	288	738	**1316**	332	768	**1100**				100
1998	450	325	752	**1528**	450	264	687	**1402**	344	755	**1099**				100
1999	489	337	740	**1567**	485	279	679	**1443**	365	753	**1118**				100
2000	566	358	738	**1662**	564	317	679	**1560**	420	769	**1189**				100
2001	475	411	754	**1640**	469	354	707	**1530**	435	777	**1211**				100
2002	562	426	761	**1749**	553	369	706	**1628**	465	792	**1257**				100
2003	443	455	776	**1675**	438	393	702	**1533**	465	765	**1230**				100
2004	283	456	749	**1488**	272	350	681	**1304**	386	709	**1095**				100
2005	449	379	695	**1523**	424	272	608	**1304**	388	715	**1103**				100
2006	357	380	701	**1438**	348	212	582	**1142**	356	717	**1073**				100
2007	322	349	703	**1374**	316	201	585	**1101**	331	706	**1037**				100
2008	304	325	692	**1320**	295	168	597	**1059**	289	709	**998**				100
2009	368	283	695	**1346**	349	148	590	**1088**	296	726	**1023**				100
2010	457	290	712	**1459**	448	135	630	**1214**	329	812	**1141**				100
2011	405	322	796	**1523**	383	183	723	**1290**	281	832	**1113**				100
2012	337	276	815	**1428**	327	63	692	**1083**	201	780	**982**				100
2013	367	197	765	**1329**	351	32	655	**1038**							100
2014															
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.95		
1994	0.40			0.95		
1995	0.40			0.95		
1996	0.40			0.95		
1997	0.40			0.95		
1998	0.40			0.95		
1999	0.40			0.95		
2000	0.40			0.95		
2001	0.40			0.95		
2002	0.40			0.95		
2003	0.40			0.95		
2004	0.40			0.95		
2005	0.62			0.95		
2006	0.90			0.95		
2007	0.90			0.95		
2008	0.90			0.95		
2009	0.90			0.95		
2010	0.90			0.95		
2011	0.90			0.95		
2012	0.59			0.95		
2013	0.66			0.95		
2014						
2015						
2016						
2017						
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Parameters:	Optim cells
Adult Survival =	0.950
Initial Total Male Pop/10,000 =	0.025
Initial Female Pop/10,000 =	0.091

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juv	Total Harvest	Total Males	Females
1993		28.74	6.52	28.10	36.78	7.60	60	25	8	93	25.9	3.0
1994		71.43	12.61	25.37	28.57	6.91	55	76	13	144	27.1	9.5
1995		60.36	9.34	31.02	45.05	7.67	52	81	9	142	21.2	10.2
1996		77.78	10.48	35.74	40.48	6.72	56	96	8	160	20.6	12.6
1997		36.75	5.50	42.73	34.94	5.33	56	72	9	137	17.6	9.7
1998		59.85	8.36	43.24	67.15	9.05	56	59	0	115	18.9	8.6
1999		66.10	9.65	45.61	50.85	8.06	53	55	4	112	17.3	8.2
2000		76.70	8.11	48.50	50.49	6.07	37	54	2	93	11.4	8.0
2001		62.98	7.02	54.58	50.48	6.04	52	43	5	100	13.9	6.3
2002		73.83	9.28	55.96	40.27	6.16	52	50	8	110	13.4	7.2
2003		57.14	9.93	58.68	85.71	13.23	57	67	5	129	13.8	9.5
2004		37.78	7.60	60.83	46.67	8.72	96	62	10	168	23.2	9.1
2005		64.67	8.43	54.48	52.00	7.26	97	79	23	199	28.2	12.5
2006		50.91	6.82	54.28	49.09	6.66	153	108	8	269	44.3	17.0
2007		45.83	9.64	49.67	41.67	9.05	135	107	6	248	42.5	16.7
2008		43.88	6.74	46.96	30.94	5.40	143	86	8	237	48.4	13.7
2009		52.99	8.32	40.80	60.68	9.13	123	95	17	235	47.7	15.0
2010		64.21	10.54	40.79	46.32	8.45	141	74	8	223	53.4	11.4
2011		50.85	8.06	40.45	45.76	7.52	126	66	20	212	43.0	9.1
2012		41.38	6.35	33.82	35.86	5.80	193	112	9	314	77.0	15.1
2013		48.00	7.54	25.80	43.20	7.03	150	100	15	265	83.6	14.4
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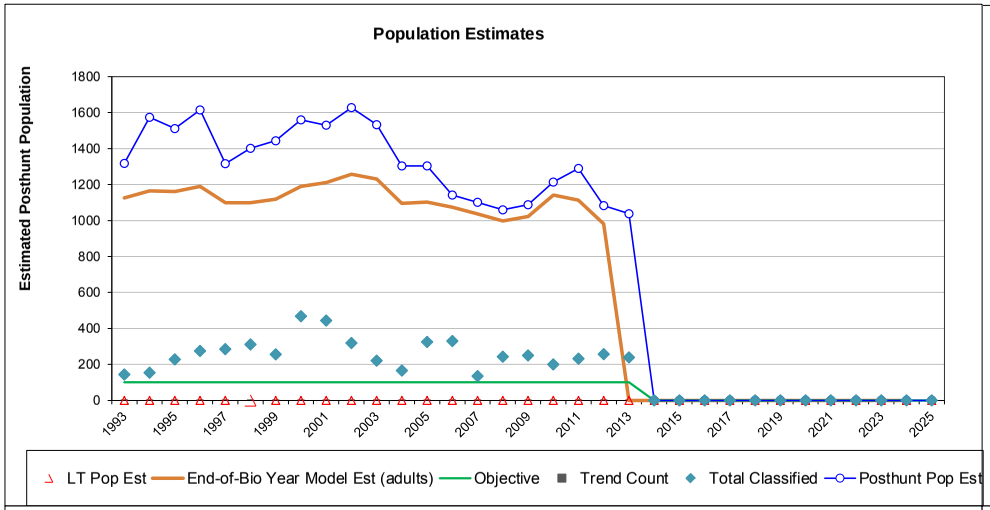
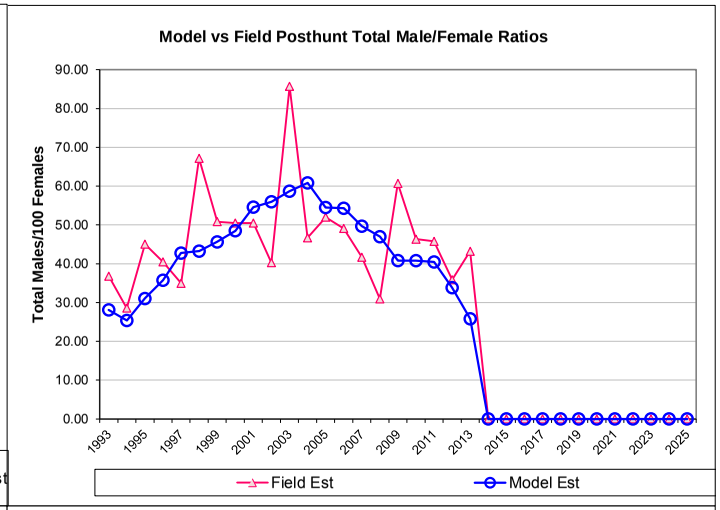
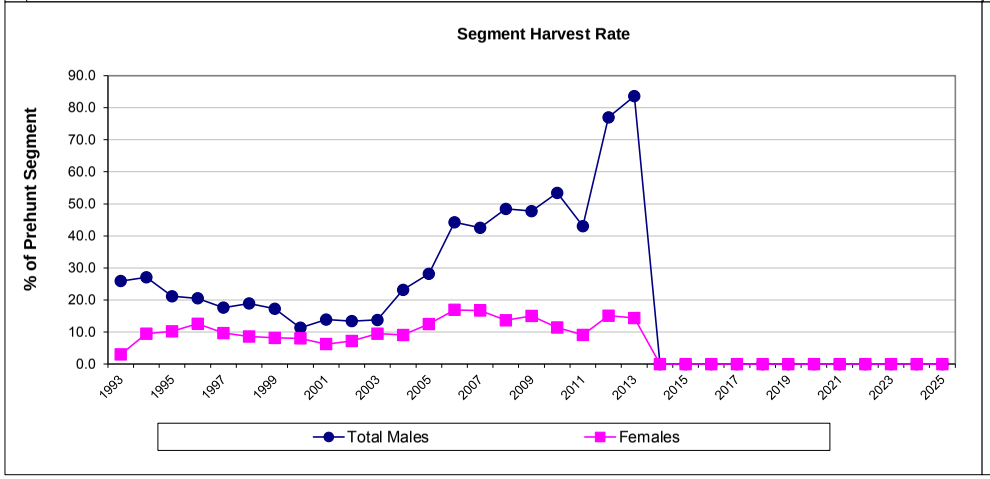
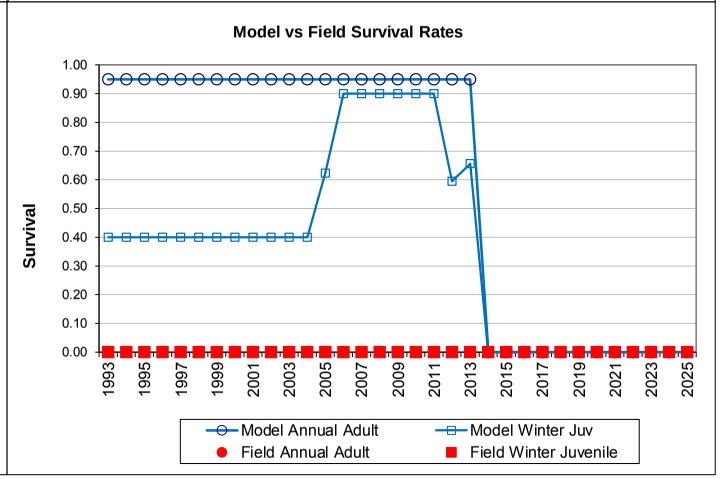
FIGURES









Comments: In 1996, only total male pronghorn observed was recorded. I averaged the proportion of yearling vs. adult males for 3 years prior (1993-1995) and 2 years post (1997-98) for values.
Classification data were not available for 2005 and 2011. 5-year averages were used. Trend data was adjusted by 80% in 1994 and 85% in 1996 based on hours flown (3.5 hrs in 1994 and 3.0 hrs in 1996).

END

PH355 - Beckton
HA 109
Revised - 4/87